

Commission of Inquiry into the Decline of
Sockeye Salmon in the Fraser River



Commission d'enquête sur le déclin des
populations de saumon rouge du fleuve Fraser

Public Hearings

Audience publique

Commissioner

L'Honorable juge /
The Honourable Justice
Bruce Cohen

Commissaire

Held at:

Room 801
Federal Courthouse
701 West Georgia Street
Vancouver, B.C.

Tuesday, December 7, 2010

Tenue à :

Salle 801
Cour fédérale
701, rue West Georgia
Vancouver (C.-B.)

le mercredi 7 décembre 2010

APPEARANCES / COMPARUTIONS

Brian J. Wallace, Q.C. Lara Tessaro	Senior Commission Counsel
Tim Timberg Geneva Grande-McNeill	Government of Canada
D. Clifton Prowse, Q.C.	Province of British Columbia
No appearance	Pacific Salmon Commission
No appearance	B.C. Public Service Alliance of Canada Union of Environment Workers B.C. ("BCPSAC")
No appearance	Rio Tinto Alcan Inc ("RTAI")
Alan Blair Shane Hopkins-Utter	B.C. Salmon Farmers Association ("B.C.SFA")
No appearance	Seafood Producers Association of B.C. ("SPAB.C.")
No appearance	Aquaculture Coalition: Alexandra Morton; Raincoast Research Society; Pacific Coast Wild Salmon Society ("AQUA")
Tim Leadem, Q.C.	Conservation Coalition: Coastal Alliance for Aquaculture Reform Fraser Riverkeeper Society; Georgia Strait Alliance; Raincoast Conservation Foundation; Watershed Watch Salmon Society; Mr. Otto Langer; David Suzuki Foundation ("CONSERV")
Don Rosenbloom	Area D Salmon Gillnet Association; Area B Harvest Committee (Seine) ("GILLFSC")

APPEARANCES / COMPARUTIONS, cont'd.

David Butcher, Q.C.	Southern Area E Gillnetters Assn. B.C. Fisheries Survival Coalition ("SGAHC")
Chris Watson	West Coast Trollers Area G Association; United Fishermen and Allied Workers' Union ("TWCTUFA")
No appearance	B.C. Wildlife Federation; B.C. Federation of Drift Fishers ("WFFDF")
No appearance	Maa-nulth Treaty Society; Tsawwassen First Nation; Musqueam First Nation ("MTM")
No appearance	Western Central Coast Salish First Nations: Cowichan Tribes and Chemainus First Nation Hwlitsum First Nation and Penelakut Tribe Te'mexw Treaty Association ("WCCSFN")
Brenda Gaertner Leah Pence	First Nations Coalition; First Nations Fisheries Council; Aboriginal Caucus of the Fraser River; Aboriginal Fisheries Secretariat; Fraser Valley Aboriginal Fisheries Society; Northern Shuswap Tribal Council; Chehalis Indian Band; Secwepemc Fisheries Commission of the Shuswap Nation Tribal Council; Upper Fraser Fisheries Conservation Alliance; Other Douglas Treaty First Nations who applied together (the Snuneymuxw, Tsartlip and Tsawout); Adams Lake Indian Band; Carrier Sekani Tribal Council; Council of Haida Nation ("FNC")

APPEARANCES / COMPARUTIONS, cont'd.

Joseph Gereluk	Métis Nation British Columbia ("MNB.C.")
No appearance	Sto:lo Tribal Council Cheam Indian Band ("STCCIB")
No appearance	Laich-kwil-tach Treaty Society James Walkus and Chief Harold Sewid Aboriginal Aquaculture Association ("LJHAH")
No appearance	Heiltsuk Tribal Council ("HTC")
No appearance	Musgagmagw Tsawataineuk Tribal Counsel ("MTTC")

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Vancouver, B.C. /Vancouver (C.-B.)
December 7, 2010/le 7 décembre 2010

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2
3
4 THE REGISTRAR: Order. The hearing is now resumed.
5 MR. WALLACE: Good morning, Mr. Commissioner. Brian
6 Wallace, Commission counsel, and we are in the
7 examination of this panel by Canada, Mr. Timberg.
8 MR. TIMBERG: Mr. Timberg, T-i-m-b-e-r-g, for Canada.
9

10 CROSS-EXAMINATION BY MR. TIMBERG, continuing:
11

12 Q Yes, I'd like to start this morning asking Dr.
13 Irvine and Dr. Hyatt if they could provide just a
14 brief description of the peer review process at
15 DFO; what's the purpose of it?

16 DR. IRVINE: Yeah, well, maybe -- is this on? Okay.
17 All right, so maybe I'll start and Dr. Hyatt can
18 add to this. Within --

19 MR. WALLACE: Mr. Commissioner, I'm sorry to stand up
20 so quickly, but there was examination on this
21 topic and the topic of science and management at
22 DFO in the very first set of hearings, so I'm not
23 sure what this adds.

24 MR. TIMBERG: Mr. Commissioner, it's -- I'm getting to
25 a point with the Holtby and Ciruna paper and
26 whether the paper was -- whether the final copy
27 included a list of conservation units, and so
28 there are a series of questions with respect to
29 whether it's an open process or the stakeholders
30 participate, and it relates back to Strategy 1, a
31 conservation unit work that was prepared, and I
32 thought it would be of assistance to the
33 Commissioner to have a brief introduction to the
34 role of the peer review process before I get to
35 those more detailed questions.

36 THE COMMISSIONER: Mr. Timberg, I recall we did cover
37 this quite thoroughly; that is, the role of the
38 peer review process and how it functions and how
39 it operates. I would prefer that you move right
40 to your questions regarding the paper itself.

41 MR. TIMBERG: Okay, thank you.

42 Q Mr. (sic) Irvine, can you advise whether the
43 Holtby and Ciruna paper that was peer reviewed,
44 whether it included a list of conservation units?

45 DR. IRVINE: And I will defer to Dr. Hyatt in just a
46 moment, but I think the important thing to realize
47 is that it's the methodology that's really most

1 important, the methodology went through a very
2 vigorous peer review. Now, Dr. Hyatt actually
3 chaired the meeting, I believe, that -- where the
4 peer review took place, so I think I'll ask Dr.
5 Hyatt to answer.

6 Q Okay. So Dr. Hyatt, can you advise whether the
7 Holtby and Ciruna paper included a list of
8 conservation units?

9 DR. HYATT: So there was a provisional list of
10 conservation units that was provided in
11 association with the methodology. That
12 provisional list was examined as part of the peer
13 review process but, of course, there are area
14 experts who have much more detailed knowledge
15 about, you know, the geographic location, in
16 particular life history characteristics of each of
17 these CU's, and so it was regarded as provisional
18 until, you know, full responses from all of the
19 areas could be vetted and the list could then move
20 to a next level of, you know, somewhat less
21 provisional but firmer.

22 Over time, this list is expected to change,
23 but I think if you queried the authors of the
24 paper they would -- and anyone who had reviewed
25 it, they would say, "Well, the expected changes
26 would really be on the order of a few percentage,"
27 you know, "a very small proportion over the first
28 few years, and as time went on the number of
29 revisions would become less and less as
30 information became more complete."

31 Q Okay. And so is it, therefore, that it was the
32 methodology that needed to be peer reviewed before
33 you came up with a published list of CU's?

34 DR. HYATT: Yes, the methodology identifies the
35 criterion and the procedure by which those -- and
36 the particular data sets, the way in which they
37 would be used, such that there's a very
38 standardized way of considering each sort of
39 nominal CU and confirming that, yes, it meets
40 these requirements and it emerges as an entity
41 that we would regard as a conservation unit onto
42 itself.

43 Q Okay. Thank you. And Dr. Hyatt, can you explain
44 whether the time between the actual review and
45 then the publication of the CSAS paper, whether --
46 how that gap between the meeting and then the
47 publication, what's the significance of that?

1 DR. HYATT: Well, there is a process for final -- for
2 formal finalization of the published material that
3 requires, you know, confirmation, editing of the
4 actual text, arrangements to post it on the
5 website, those sorts of due process just to
6 provide the material so that it's widely
7 available. However, once a paper and its
8 methodology or content is accepted, there is
9 advice that goes forward to managers where the
10 advice is time sensitive, for example, such that
11 they have the benefit of that advice coming very
12 close on the heels of the end of each CSAS
13 meeting.

14 So there are a number of products in addition
15 to the papers, themselves. They're the minutes of
16 the meetings that are available. There is a
17 scientific advisory report in many circumstances
18 that's provided to kind of provide a quick
19 overview and the advice of the committee. So each
20 of these products has a place and, to some extent,
21 its own timeline for provision.

22 Q Okay. Thank you. Dr. Holt, with respect to
23 Action Step 1.2, I'd like to follow up on some of
24 the questions from last week.

25 Once you've measured the metrics for a
26 conservation unit, do you know how they will be
27 combined to determine an overall status? And an
28 example would be, if one metric is in the green
29 zone and the other is in the red zone, how do you
30 deal with this?

31 DR. HOLT: This has been a topic of discussion amongst
32 our Strategy 1 Oversight Group. We haven't come
33 to consensus on how to combine information across
34 metrics. One idea is to develop some methodology
35 that will combine those reds and ambers and greens
36 across -- to come up with an overall. Another is
37 that those -- information from those different
38 metrics should be kept separate, because combining
39 them results in a loss of information.

40 Q Right.

41 DR. HOLT: We lose a part of the story. And so it's
42 yet to be decided what the final approach will be,
43 and will likely be a topic for a CSAS paper and
44 review in the next year.

45 Q So that's ongoing work that you're doing?

46 DR. HOLT: Yes, that's ongoing work.

47 Q Thank you. And you mentioned the -- that group --

1 what's that group that you just mentioned, sorry?

2 DR. HOLT: It's the Strategy 1 Oversight Group.

3 Q Can you explain what that group is?

4 DR. HOLT: It's a group that brings together managers
5 who are obliged to implement Wild Salmon Policy
6 Strategy 1 with scientific staff and stock
7 assessment staff who are working on the technical
8 underpinnings of that strategy to bring them
9 together to provide updates on work on developing
10 tools to help with the implementation and updates
11 on how that implementation is going to discuss
12 what common challenges are across areas in that
13 implementation.

14 Q Okay. Thank you. And Dr. Holt, I'd like to ask
15 you a question about dealing with a problem of
16 shifting -- or a fact, perhaps, of shifting
17 productivity over time. And so my question is:
18 How do you handle the changing productivity of
19 some Pacific salmon, like Fraser sockeye?

20 DR. HOLT: So this is a challenge that we face with
21 this Oversight Group. It's a problem, because
22 standard analyses assume that productivity is
23 constant over time. However, if productivity has
24 changed in recent years, for example, has declined
25 in recent years, then we may be overestimating it
26 if we're using a kind of long time series that
27 includes historical periods of high productivity,
28 which may mean that our benchmarks estimated from
29 those longer time series may not be sufficiently
30 precautionary.

31 Q Mm-hmm.

32 DR. HOLT: And so in the Fraser River, where we've seen
33 trends or declines in productivity, we've
34 investigated other types of analyses that account
35 -- that explicitly account for that changes in
36 productivity over time, so that explicitly
37 accounts for recent lower productivity when
38 estimating benchmarks.

39 Another approach is to, instead of using an
40 entire time series of 50 years, to use shorter
41 time series that represent the more recent periods
42 of low productivity when estimating benchmarks.

43 Q Okay. Thank you. And last week we discussed
44 problems with temporal or geographic gaps in
45 dataset, and we were talking about sort of this
46 uncertainty. And do you have anything further to
47 clarify the work that you're doing to deal with

1 the gaps in information available to determine
2 benchmarks?

3 DR. HOLT: Yes, that's another topic, a challenge
4 that's come up in our Oversight Group, how to deal
5 with missing years of data in time series, and
6 missing locations within a conservation unit. So
7 that was a topic of discussion at a recent
8 workshop, an implementation workshop, as well as a
9 recent working group paper. So we're actively
10 working on developing methods to infield those
11 datasets to -- for those data gaps, to respond to
12 those data deficiencies.

13 Q And just for clarification, your work on
14 indicators and benchmarks was peer reviewed?

15 DR. HOLT: Yes, it was a CSAP peer review.

16 Q Thank you. And Dr. Holt, I'd like to ask you
17 about your consultation on your benchmark
18 methodology. Was there any input from First
19 Nations or other stakeholders on our benchmark
20 methodology paper?

21 DR. HOLT: Yes, there was input at the CSAP meeting in
22 January 2009, when that work was reviewed. There
23 is wide participation, including First Nations.
24 In addition, in subsequent implementation
25 workshops, for example, one in June 2010,
26 participants included representation from First
27 Nations. So there was in put from First Nations
28 in the implementation there.

29 Q Okay. And have you participated at any
30 consultation on the implementation of the
31 benchmark methodology?

32 DR. HOLT: So that would be that recent June workshop
33 where we -- where First Nations were invited to
34 participate in that implementation workshop, the
35 Strategy 1. That was June 2010.

36 Q Okay. Thank you. I'd like to now ask you about
37 setting benchmarks for the conservation units.
38 Have any conservation units been identified as
39 priorities for benchmark determination?

40 DR. HOLT: The over -- Strategy 1 Oversight Group
41 identified four priorities, one being Fraser River
42 sockeye salmon, and another being Fraser River
43 Chinook, another being Barkley CU's, all species,
44 and Skeena CU's, all species.

45 Q Okay. And why did the group choose these CU's as
46 priorities?

47 DR. HOLT: I can speak to the Barkley Sound. It was

1 chosen because it was a pilot, a Wild Salmon
2 Policy pilot. Fraser River, in part because this
3 process had already started, the Cohen Commission.
4 The rest of the panel can speak to other reasons.
5 Q Okay. And so perhaps that would be the Fraser
6 River Chinook and the Skeena CU's, if other
7 members of the panel can assist? The question is
8 why -- how -- why these two CU's were identified
9 as priorities for benchmark determination.
10 MR. SAUNDERS: Yes, Mr. Commissioner, I can add that
11 some of the additional work in the Skeena was
12 because we had additional resources and
13 initiatives that were moving ahead on planning
14 that also wanted to work on benchmarks, so in
15 addition to the work on -- in the pilot and the
16 work that was going on in the Fraser, other
17 initiatives came onside as well.
18 Q Okay. And the Fraser River Chinook, is that...?
19 MR. SAUNDERS: Fraser River Chinook, I can't recall the
20 rationale there.
21 Q Okay.
22 DR. IRVINE: Well, I can comment. I wasn't actually
23 part of that decision-making process, but Fraser
24 Chinook were the topic of a very early CSAS paper
25 identifying conservation units, and there's also
26 been some conservation concerns raised in the past
27 about early run time of the Fraser Chinook. So I
28 actually don't know if those were the reasons --
29 Q Right.
30 DR. IRVINE: -- but they would be logical reasons.
31 Q Thank you. And just for confirmation, I think
32 last week, Dr. Holt, you mentioned that Blair
33 Holtby was doing work on a rapid assessment
34 method. Is that part of this?
35 DR. HOLT: So that's one method for identifying further
36 priorities, those that have high conservation
37 concern would be pointed or highlighted in Dr.
38 Holtby's assessment -- synoptic assessment
39 framework.
40 Q Thank you. And I'm not sure if this has been
41 answered, but has any work been done on setting
42 benchmarks for these four groups of priority CU's?
43 DR. HOLT: So we've spoken about the Fraser River
44 sockeye --
45 Q Yeah.
46 DR. HOLT: -- where we made progress. And Barkley
47 Sound benchmarks have been identified, but they

1 haven't been formally reviewed.

2 Q Mm-hmm.

3 DR. HOLT: In the Skeena, my understanding is that work
4 is underway, but I haven't seen progress -- the
5 specific progress, myself. And I'm uncertain
6 about Fraser Chinook.

7 Q Thank you. Ms. Stalberg, with respect to Action
8 Step 2.1, you told us about the habitat status
9 reports, which you helped to develop. One moment,
10 please. Sorry, I'll go back to Action Step 1.3;
11 two questions for the panel.

12 What work is currently being done on the
13 monitoring and assessment of CU's? Perhaps -- I'm
14 not sure, Dr. Irvine or Mark Saunders?

15 DR. IRVINE: Because I believe the question was what
16 work is being undertaken on the monitoring and
17 assessment of CU's, and I think it's important to
18 point out that we have been assessing the status
19 of salmon in British Columbia for over 50 years,
20 so that there's a long history of stock assessment
21 work that's been undertaken.

22 As far as Fraser sockeye are concerned,
23 Fraser sockeye CU's, beginning with the
24 International Salmon Commission, and then followed
25 on by DFO, we have over, again, almost 50 years of
26 detailed stock assessment research.

27 What's different with the Wild Salmon Policy
28 is that this process is formalized and the
29 conservation units are specifically identified,
30 but in many cases the work has been underway for
31 many years. That doesn't mean to say that we have
32 assessment information on all conservation units,
33 we don't, and Dr. Holt talked briefly about how we
34 are -- the work that she's undertaking to kind of
35 deal with these missing data gaps.

36 So in the policy, itself, it refers to what
37 we call indicator systems, which are systems where
38 there's a lot of detailed information that's
39 gathered, intensive monitoring, where we've
40 usually trying to partition survival into -- or
41 mortality into the freshwater component and the
42 ocean component, and then extensive monitoring,
43 which are surveys over a broad range of area,
44 really, sometimes just looking at presence or
45 absence and looking for major changes.

46 So this kind of design is being formalized in
47 a WSP conservation unit stock assessment

1 framework, which Dr. Holtby is working on, and my
2 understanding is that that will be presented for
3 CSAS review sometime this next calendar year, I
4 believe. So there is a more formal assessment
5 framework monitoring process which is being
6 reviewed, and it's something that Dr. Holtby is
7 working -- has been working on for several years.

8 Q Okay. And is it my understanding from last week
9 that DFO has data on 19 Fraser sockeye CU's; is
10 that the right number?

11 DR. IRVINE: I think there's data on more than 19. My
12 recollection was that there was sufficient to
13 develop a preliminary status assessment of 19. Is
14 that the case?

15 DR. HOLT: Twenty-six.

16 DR. IRVINE: Twenty-six, sorry.

17 Q Twenty-six, okay. Thank you for clarifying that,
18 Dr. Holt.

19 And Mr. Saunders, can you explain for the
20 benefit of the Commissioner, this stock assessment
21 framework?

22 MR. SAUNDERS: Yes, Mr. Commissioner. I think the
23 stock assessment framework has meant a lot of
24 things to different people, but I -- over its
25 development, but I really see it as a CU by CU
26 business plan for matching up priorities and
27 defining what actual stock assessment program
28 we're going to put in place with the resources
29 that we have for each of the CU's.

30 And as Dr. Irvine pointed out, we certainly
31 have a series of monitoring programs and options
32 that are documented in the policy around indicator
33 systems, intensive monitoring and extensive
34 monitoring. It's a costly undertaking and we've
35 got to be careful in how we -- we employ that in
36 the most efficient manner, and that CU's get the
37 attention that we assign a priority relative to
38 the importance of that CU and the risk that's
39 being visited on it. So it's really a business
40 plan on how to move forward, Mr. Commissioner.

41 Q Okay, thank you. So what other -- what else would
42 allow for further progress on monitoring as
43 contemplated by Action Step 1.3?

44 MR. SAUNDERS: Mr. Commissioner, I believe that the
45 development of the stock assessment framework is
46 one of the key elements that's required to move
47 ahead the monitoring, because it establishes the

1 priorities and, as Dr. Holt mentioned, the work
2 that Dr. Holtby is currently working on to develop
3 a synoptic framework, so a very rapid assessment
4 of the status of as many of the CU's that we have
5 baseline information on, to allow us to have in
6 front of us that overall view of the status to
7 help us prioritize where work is needed and to
8 design a stock assessment approach that is
9 appropriate to -- to move forward.

10 Q Thank you. So --

11 MR. WALLACE: Mr. Commissioner. Mr. Timberg, I wonder
12 if the witness is -- it sounds like he's referring
13 to a document that I'm not familiar with, a
14 business plan relating to monitoring. I -- what
15 is the document he's referring to?

16 MR. SAUNDERS: Mr. Commissioner, I suppose that -- I
17 believe they're in -- I don't think we've referred
18 to them, yet and I don't recall the document
19 number, but we did -- there was a business plan or
20 a stock assessment framework developed in 2004,
21 prior to the development of the conservation
22 units, and it's that document that defined the
23 core assessment activities that we -- that are
24 referred to in the Wild Salmon Policy on page 19,
25 around those issues -- those -- what will be the
26 plan for each CU.

27 Right now, it does -- the 2004 document
28 describes the approach that we take to stock
29 assessment in each of the regions, or each of the
30 areas within the region, but it hasn't -- it is
31 the part of building the new framework is to
32 update that to refer to conservation units
33 specifically. And so that's the process that
34 Blair -- Dr. Holtby's involved in right now.

35 MR. WALLACE: I wonder, Mr. Commissioner, if this
36 document has been -- is on Canada's list?

37 MR. TIMBERG: If I could speak to my -- Mr. Saunders at
38 the break, I'll get back to you on that.

39 Q Ms. Stalberg, if we could turn to Action Step 2.1,
40 you told us a bit about the habitat status report,
41 which you helped to developed, and you mentioned
42 there was a two-tier --

43
44 (CELL PHONE INTERFERENCE)

45
46 THE REGISTRAR: I think we have some Blackberries
47 running or operating.

1 MR. TIMBERG: Okay.

2 Q Ms. Stalberg, you told us a bit about habitat
3 status reports which you helped to develop, and
4 you mentioned there was a two-tier approach to
5 characterizing habitat: one, an overview report
6 for each CU; and, two, a habitat status report.
7 Can you explain what an overview report is?

8 MS. STALBERG: Yes, Mr. Commissioner. The overview
9 report is like the title, brief overview of the
10 watersheds within a CU where the population of
11 fish would exist, the general threats to the
12 population within a CU, habitat-related threats,
13 the -- through pulling out of some of the
14 provincial databases early thinking was to
15 provide, say, the area of the estuary, the length
16 of stream that's accessible to them, or the size
17 of the lake that they inhabit.

18 Q Okay. And have there been any overview reports
19 generated?

20 MS. STALBERG: Back --

21 Q Have there been any?

22 MS. STALBERG: Yeah, back in 2005/2006 we piloted both
23 the overview reports and the habitat status
24 reports. And "pilot" by meaning of testing out a
25 format structure of them. So there was five
26 overview reports generated, I believe.

27 Q Okay. And was there an overview report completed
28 for Cultus Lake?

29 MS. STALBERG: Yes, there was.

30 Q Okay. And what's the present status of these
31 overview reports?

32 MS. STALBERG: The present status is that they are --
33 well, we did consult on the two-tier approach
34 early on in the consultations and gained generally
35 positive feedback on this approach. And as far as
36 I am aware, the overview reports have been posted
37 internally on a share drive, and I cannot tell you
38 if they are on the web-mapping application that's
39 available to the public.

40 Q Okay. Thank you. And can you explain, then, what
41 is a habitat status report?

42 MS. STALBERG: So through our work with looking at data
43 availability and the amount of effort it would
44 take to pull information out of provincial
45 databases, for example, an even, what it's called
46 gray literature, or literature that is not
47 published, or published literature. A two-tier

1 approach was determined because there's quite a
2 bit of effort that's required for, then, the
3 habitat status report.

4 So an overview report, as I mentioned, if
5 there was threats, landscape-level threats, like
6 the land has been converted into urban or
7 agriculture or logged to, say, a benchmark, then a
8 flag might come up, and that would initiate the
9 development of a habitat status report, a more
10 detailed report. Or there could be a priority CU
11 where we want more information than what's in the
12 overview.

13 So the habitat status report goes into a fair
14 amount of detail on the population of fish, the
15 life history requirements for each life stage, you
16 know, from egg to adult, and then what's required,
17 and then what are the limiting factors per life
18 stage, the highly productive habitats per life
19 stage.

20 Q Okay.

21 MS. STALBERG: And then the indicators would be
22 relevant to those particular limiting habitats and
23 highly productive in the life stage. They would
24 be selected and built into the habitat status
25 reports. Any monitoring to gain a status relative
26 to benchmarks. And then the conservation efforts
27 done to date, recommendation, as well as the
28 protection efforts done to protect those highly
29 productive.

30 Q Okay. And to your knowledge, how many of these
31 habitat status reports were conducted in your
32 tenure related to sockeye salmon?

33 MS. STALBERG: So we piloted nine, and out of the nine
34 I think one was done for Trembleur Lake sockeye.

35 Q Okay. And perhaps we should turn to a habitat
36 status report?

37 MS. STALBERG: Yeah, depicting it would be helpful.

38 Q And this is at -- Mr. Registrar, if we could have
39 Exhibit 209, please. And if that could just be
40 increased in size? That's not it?

41 MS. STALBERG: That's not it, no. If you want, we can
42 pull it right out of the Stalberg, et al, paper,
43 and it's Appendix 2.

44 Q Exhibit 2?

45 MS. STALBERG: It's in the Stalberg, et al paper, and
46 it's Appendix. 2.

47 MR. TIMBERG: Okay. Sorry, one moment, please. Mr.

1 Registrar, I apologize for this, it's also located
2 at Tab 39 in Canada's list of documents, if we can
3 find it that way.

4 Q Is this the document?

5 MS. STALBERG: Yes, thank you.

6 Q And could you explain for the Commissioner what
7 this document tells us? First of all, this is a
8 habitat status report?

9 MS. STALBERG: That's correct.

10 Q And for what CU?

11 MS. STALBERG: It is east coast Vancouver Island Coho
12 conservation unit, and it's specific to the
13 Englishman River.

14 Q Okay. And what does this kind of document tell
15 us?

16 MS. STALBERG: This is an example of the habitat status
17 report. The headings in the blue are basically
18 those steps that I just ran over with the group.
19 The life stage of the fish is listed on the far
20 left column, in the mauve, and then what
21 requirements for each life stage are then listed.
22 Moving on to what are the known limiting factors
23 and high value habitats --

24 Q And Ms. Stalberg, would you agree that what's new
25 about a habitat status report is that you're
26 covering each of the different stages of the
27 salmon's life and you're describing the various
28 habitats from the egg stage, the alevin stage,
29 through to its departure down the Fraser to the
30 ocean and back; is that --

31 MS. STALBERG: That's correct, or from whatever
32 watershed it's migrating out to the ocean through.
33 So this status report then -- it was an early
34 example to test the thinking, the logic, that line
35 of thought for right from the life stage through
36 to the known limiting factors and high value
37 habitats, and then, well, what indicators do you
38 select that relate to those habitats? And then
39 the performance indicators or status. Well,
40 status would be, figure it out once monitoring was
41 done. Status is, you know, how -- how are you in
42 relation to the benchmark, and that's where it's
43 -- the next step is performance indicator
44 threshold.

45 Q Okay.

46 MS. STALBERG: And then next is, as I mentioned, the
47 possible measures to address limiting factors, the

1 possible measures to maintain productivity, and
2 then the habitat protection and restoration
3 measures undertaken.

4 Q Okay. And what does the yellow colour designate?

5 MS. STALBERG: Well, when we -- so in this '05/'06
6 pilot, what the -- what we did, so Gary Taccogna
7 and others on the Habitat Working Group, including
8 myself, said, "Yeah, this seems like a good
9 approach to drilling into the requirements of the
10 policy and gaining that information in sort of a
11 ready format, but let's test that." So Gary
12 populated this with information he gained through
13 going through that gray literature and the
14 published literature. He populated it and then we
15 said, "Well, right now we don't have the habitat
16 requirements for each life stage."

17 Actually, I'll step back. So what we did is
18 we said, "Well, let's identify, through these
19 columns, the yellow, what we're going to want to
20 test the contractors" -- or, sorry, yes, "the
21 contractors to test in terms of the logic,"
22 because we didn't have, at that time, the our
23 performance indicators, and we weren't doing
24 monitoring. So those lines were struck out, as
25 you can see in the top column. But we left it in
26 there so that whomever was undertaking these,
27 whether they be internal DFO staff or contractors
28 that we were testing these out on, could see the
29 line of logic as well.

30 Q Okay.

31 MS. STALBERG: So the yellow highlighted ones were the
32 ones that we did want to be filled in.

33 Q Right. And so does this template capture
34 enhancement efforts?

35 MS. STALBERG: Yes. So it captures enhancement and
36 it's meant to be an adaptive management approach
37 as well. So as you see in the last column, it's
38 habitat protection and restoration measures
39 undertaken. So that captures what has been done.

40 And by starting to itemize these things,
41 these efforts, then you can gain a sense, well, is
42 it really addressing the issue, these limiting
43 factors, or is the same thing being done over and
44 over and we actually need to change our practices?

45 Q Right.

46 MS. STALBERG: Or, is it effective and thus the habitat
47 is, over time, no longer limiting? So there's a

1 need to revisit these every five years and update
2 them with information.

3 Q Okay. And what's -- I know you left your position
4 in early 2009. Do you know what the plan is,
5 moving forward, on the implementation of Action
6 Step 2.1?

7 MS. STALBERG: Before I get to that, I just want to
8 mention about these habitat status reports.
9 They're partial in the sense that, as you can see,
10 there's only so many columns that we ask to be --

11 Q Mm-hmm.

12 MS. STALBERG: -- populated, so they're partial in that
13 sense. But they're also partial in a sense that
14 we just -- we used internal information for
15 those --

16 Q Right.

17 MS. STALBERG: -- that undertook the work. So the
18 approach to these would be really to accrete
19 information. You would look at literature,
20 published, gray literature. You would talk to,
21 you would gain local ecological knowledge --

22 Q That's helpful, yeah.

23 MS. STALBERG: -- Aboriginal technical knowledge. So
24 you would build the picture, and then you would,
25 in a sense, test those perspectives with the
26 indicators as well. Because sometimes people have
27 different views on what's going on, and it's very
28 useful to have indicators as objective data to
29 test those views. And so we have, since testing
30 these, the habitat requirements for each life
31 stage --

32 Q Right.

33 MS. STALBERG: -- we did run a contract with Ron
34 Diewart, and he published -- or he produced a
35 series of reports for each species on each life
36 stage and what is needed, so that that is, as I
37 believe, on the web-mapping application, and so
38 anybody that wants to do these can then mine those
39 reports of Mr. Diewart's and put in the habitat --
40 fill in that column on the habitat requirements
41 for each life stage.

42 Q That's very helpful. And so what's the plan,
43 moving forward, with this Action Step 2.1?

44 MS. STALBERG: Well, we did, again, consult extensively
45 on this type of approach, the overview and habitat
46 status, and they gained favourable feedback. So
47 through a quite intensive process with the, what's

1 called OHEB, group, there were --

2 Q And that's Oceans Habitat Enhancement Branch?

3 MS. STALBERG: And Enhancement Branch, yes. So there
4 -- there were essential elements of all of the
5 approaches and products that were developed
6 through the Habitat Working Group's efforts for
7 OHEB to take forward. One of them was to continue
8 on generating one or two of these per DFO area per
9 annum, and the reason, even if indicators aren't
10 being monitored to their fullest extent, by still
11 just partially filling in these, it helps with
12 that prioritization of, well, what are those
13 really important habitats that we need to focus in
14 on and protect? Where do we need to direct our
15 restoration efforts? And by posting these on
16 something like a web-mapping application, it also
17 then helps the public, being -- say it's
18 corporations looking at developing in certain
19 areas or partners wanting to do restoration, it
20 helps to guide their efforts in terms of what
21 areas to avoid or what areas to focus on for
22 restoration efforts.

23 Q Okay.

24 MS. STALBERG: Oh, and I would add one more thing.

25 Q Yeah?

26 MS. STALBERG: And there's also partial or evolution as
27 -- as Strategy 3 begins to refine the indicators,
28 I could see an evolution of these reports. For
29 example, so it might integrate both Strategy 3 and
30 Strategy 2. So over time there might be an
31 evolution of these.

32 Q Okay. Thank you. And so my next question is:
33 Did the Habitat Wild Salmon Policy Working Group
34 develop any of its own indicators?

35 MS. STALBERG: Yes. There were two indicators and
36 then, as well, refining some of the others that
37 were suggested through our consultations. So one
38 was for -- specific for sockeye, and that was the
39 coldwater refuge zone and --

40 Q Can you explain what that is?

41 MS. STALBERG: Sure. For anybody that might reside in
42 a very hot area, like Kamloops, if your house is
43 not air conditioned, the only thing you might want
44 to do during the day is go to the basement. You
45 want to get refuge from the heat, you go to the
46 basement, where it's cool. You come up when it's
47 cooled down in the evening. And it's analogous to

1 the coldwater refuge zone. Sockeye, during the
2 day, they go to -- they drop in depth in the lake,
3 and they go to an area where the oxygen
4 concentration is appropriate for them to breath,
5 and there's a certain -- and the temperature is
6 appropriate, and that's -- and then, during the
7 evening, when it's darker --

8 Q Right.

9 MS. STALBERG: -- they then migrate out of this
10 coldwater refuge zone and they move towards the
11 surface, where they then feed.

12 Q All right. Thank you.

13 MS. STALBERG: So the width of this coldwater refuge
14 zone is important, because if it's narrow it can
15 compress the area where these fish are finding
16 refuge, and if it's wider, they have more space
17 and they're less competing for --

18 Q These are like hydrotherms in the lake, in the
19 depth of the lake?

20 MS. STALBERG: You could -- that's part of it, is the
21 temperature. Temperature is a factor, yes.

22 Q All right. And you mentioned that you had --
23 there were two and that was one. What was the
24 other?

25 MS. STALBERG: Yeah, another is permitted waste --
26 permitted waste discharges, and that one, through
27 our consultations, we gained a wide array of
28 feedback on which indicators to use. One was,
29 well, you could simply identify all of the
30 different industries and their sort of discharges
31 within a watershed where a CU might exist.

32 And when we started evaluating water quality
33 parameters, there are many, and they are more or
34 less responsive than each other. So we also
35 consulted with an internal expertise on water
36 quality. And after evaluating those challenges
37 with every -- not every, but many, many types of
38 water quality attributes or indicators, the best
39 approach we thought to take would be to look at,
40 well, how many of these permitted discharges occur
41 within the CU.

42 And that information would be gained from a
43 provincial database. So that's a -- that would be
44 a pressure indicator.

45 Q Right. Okay, that's helpful. Last week we went
46 to your paper which is -- Mr. Registrar, if we
47 could have Exhibit 175 brought up - and we were

1 talking about indicators, but we never saw the
2 list of indicators. So I'm wondering if you
3 could, at Exhibit 175, you could turn to Table
4 3.5? Actually, it'll be near the end somewhere.
5 So it's Table 3.5. Page 36, I think it is.
6 MS. STALBERG: It's on around page 20 of this Stalberg,
7 et al, doc.
8 MR. TIMBERG: Oh, I'm being told 36 of the PDF, but
9 that's not the table. You found it.
10 MS. STALBERG: That's it.
11 MR. TIMBERG: If that could be enlarged, please. Thank
12 you.
13 Q So if you could just, for the assistance of -- so
14 this is the list of indicators?
15 MS. STALBERG: It is, yes. So it extends on page 20
16 and 21. And it can be sorted in various ways.
17 This is sorted around species, but there are lake,
18 stream and estuary indicators, both pressure and
19 status, and quantity indicators as well. So it's
20 on page 20 and 21 of the document.
21 Q And does your paper recommend -- oh, and that's
22 exactly what this has done. This, then,
23 recommends certain indicators for certain species
24 or habitats; is that correct?
25 A Yes. It's which ones are more relevant to some
26 species than others, so --
27 Q So for our purpose here, we could look at the lake
28 rearing sockeye and estuary rearing sockeye; would
29 that be the right approach?
30 MS. STALBERG: Yes.
31 Q Okay. Thank you. Ms. Stalberg, moving onto the
32 development of habitat benchmarks, how did you
33 approach to identify habitat benchmarks used --
34 and perhaps here, could you just clarify for me
35 the difference between a habitat benchmark and the
36 other conservation unit benchmarks we've been
37 talking about?
38 MS. STALBERG: Yes. So a benchmark is the same in
39 Strategy 1 and Strategy 2. It's a measure that
40 you can then relate status to. But in Strategy 1
41 there is a call for two benchmarks -
42 Q Right.
43 MS. STALBERG: -- in order to set up those
44 red/yellow/green zones.
45 Q Right.
46 MS. STALBERG: That is not articulated in Strategy 2.
47 The benchmarks requested as per the policy in

1 Strategy 2 are that they be desired levels and/or
2 those where it's set before the productivity of
3 the habitat starts to decrease and there can be
4 some type of intervention action, if needed.

5 So based upon that, we worked on developing
6 indicators for the -- or, sorry, benchmarks for
7 the various indicators.

8 Q Okay. That's helpful. So with that
9 clarification, how did you approach the
10 identification of habitat benchmarks to
11 incorporate a precautionary approach?

12 MS. STALBERG: We have three kinds of indicators:
13 there's the pressure; status; and quantity. So
14 for the quantity indicators, we did not provide a
15 benchmark. And the quantity indicators would be,
16 well, how much of the stream is accessible,
17 accessible stream length. And we did not think it
18 appropriate to put a benchmark per CU on how much
19 stream length is needed, because there is limited
20 -- a limited understanding on the relationship
21 between the production of fish and the habitat.
22 You know, "X" kilometres of habitat will -- stream
23 will produce "X" amount of fish, and the various
24 habitat types, whether it be estuarine or other
25 types. So this was certainly identified as a need
26 to strengthen that correlation and that is not a
27 simple task, and there have been efforts in the
28 past to do that. So that's for the quantity, so
29 there are no benchmarks.

30 For the pressure and state, where there was
31 information that we could generate benchmarks, and
32 that's, again, available data or some kind of
33 relationship to fish production or habitat
34 productivity, we looked at the published material
35 and experience of the Habitat Working Group as
36 well, and determined the metrics, the way of
37 measuring the benchmark, and then determined a
38 benchmark. And in those investigations we looked
39 at -- so for temperature, for example, the status
40 indicator of temperature was set at -- so it
41 depends on the species --

42 Q Mm-hmm.

43 MS. STALBERG: -- but those were set at a precautionary
44 level. The pressure indicator of how many
45 kilometres of road is there per square kilometre
46 within a watershed, that was set at a very
47 conservative level of point four, that's like 400

1 metres, because there is literature on --

2 Q And what's the relationship between the road and
3 the conservation unit?

4 MS. STALBERG: The indicator is that -- well, more the
5 -- there's research that shows road development
6 can contribute to sedimentation within your
7 stream. It changes the hydrology, the way that
8 the water runs off the land base, so that can
9 affect how the peaks and flows within your water
10 are affected. It also relates to, again,
11 landslides, so there can be barriers to migration
12 as a result. So there's a number of risks
13 associated with the fish habitat with road
14 development, and they go up the higher the --

15 Q Okay.

16 MS. STALBERG: -- rate. So there was -- where we
17 could, we identified benchmarks. And then, where
18 there wasn't data --

19 Q I'm sorry, just for clarity --

20 MS. STALBERG: Sure.

21 Q -- where possible, you have benchmark for the
22 pressure indicator and the status; is that --

23 MS. STALBERG: Yeah, pressure and status.

24 Q Yeah.

25 MS. STALBERG: And then where there -- there wasn't
26 information --

27 Q Right.

28 MS. STALBERG: -- for example, this coldwater refuge
29 zone, so that's a new indicator. There isn't a
30 benchmark for that. What the recommendation is,
31 that you would look at, for example, all the
32 sockeye lakes through measuring this coldwater
33 refuge zone in each one. You would then, say,
34 line them up, a distribution curve it's called,
35 but line them up from the smallest to the biggest,
36 and start to analyze that and see if there is any
37 benchmarks that can be determined. And that same
38 -- so it's called a relative comparison. And
39 another example that that would be applied to
40 would be, say, for total land conversion in a
41 watershed. So there isn't -- there isn't a
42 relationship when you add up what's been logged,
43 what's been changed into agriculture, how much of
44 the land base is urban development.

45 There isn't a benchmark for rolling up all
46 those kind of data, and so what, again, the
47 Habitat Working Group, what we recommended was,

1 "Well, line these up," so line all those
2 watersheds up and how much land has been
3 converted, and then test it with LEK, local
4 ecological knowledge, and that can also include
5 ETK, and say, "Okay, so you live here. Now,
6 here's the spectrum of development in watersheds
7 within the CU. Do you see -- are you familiar
8 with any of these watersheds and where the stream
9 condition is?" in a sense, starting to unravel,
10 they're starting to show signs of sedimentation or
11 where there's gross landslides, and through that
12 kind of work then you can start to set benchmark,
13 and you may be able to translate those into other
14 CU's as well.

15 Q Okay. That's very helpful. So where there wasn't
16 a benchmark, a habitat benchmark identified, what
17 do you do in that instance?

18 MS. STALBERG: And so that's the process that I
19 explained. There can be -- it's either spatial or
20 temporal comparisons over time.

21 Q Okay. Thank you. And your paper, then, how is
22 peer review conducted of your paper different from
23 the regular CSAS peer review process?

24 MS. STALBERG: We did, Mr. Commissioner, take a
25 different approach to the review of the habitat
26 indicators, metrics and benchmarks. I was not
27 confident that the CSAS review process could
28 accommodate something like cost in selecting a
29 suite of indicators, and cost was one of the, if
30 not main, big factors in why other indicator types
31 of programs were not carried through in other
32 jurisdictions. I mentioned some of them last
33 week, I believe, like in Washington State.

34 So what we did, though, was a peer review
35 process, and we -- there were many similarities to
36 the peer review process that we undertook in
37 relation to the CSAS process. So Mr. Irvine -- or
38 Dr. Irvine and Dr. Hyatt and myself and others on
39 the Habitat Working Group, we collaborated on
40 generating the terms of reference, the agenda, and
41 participants, the representation, and quite
42 importantly, the key -- they're called key
43 reviewers, but the reviewers of the document, so I
44 ensured that we gained a reviewer that had
45 experience in developing indicators.

46 And then we gained experience -- we had a
47 reviewer that was -- had experience on

1 implementing a monitoring program. And then,
2 lastly, an interviewer that would need to manage
3 with the results, so, "What do you do with this
4 information?"

5 Q Right. And you mentioned cost as a factor in
6 identifying indicators. For the assistance of the
7 Commissioner, could you describe your concern
8 about the costs in conducting this work?

9 MS. STALBERG: Well, a couple of examples, Mr.

10 Commissioner, when -- when we looked -- we were
11 trying to look at lessons learned. So if you
12 recall, I had mentioned that the early PFRCC
13 reports, they're very helpful in identifying
14 indicators in some of the ways of frameworks for
15 rolling them out, but not the lessons learned on
16 where other Pacific Northwest jurisdictions had
17 challenges in implementing the program.

18 So Gary Taccogna, the earlier habitat
19 coordinator, and then myself followed up with
20 Carol Smith, PhD, that manages the Washington
21 State Conservation Commission. They undertook a
22 monitoring program and they broke out Washington
23 State into 45 basins and they hired nine staff,
24 and over a course of five years they set up --
25 they tackled five of these basins per -- or,
26 sorry, nine of these basins per year, and they set
27 up teams with local representatives. And just
28 mining data that's already in repositories, so not
29 going out and doing any of the monitoring
30 physically, or using new satellite imagery, it was
31 a million dollars a year.

32 So that opened our eyes on the cost of doing
33 monitoring. So there's monitoring -- you can do
34 monitoring in three ways. You can just mine
35 existing databases and hopefully they are robust.
36 You can go out and physically do the monitoring,
37 you know, go out, wade streams and take the
38 temperature, or you can do some of it remotely,
39 such as through the satellite imagery.

40 So that was one example. But then I also
41 followed up --

42 Q When was this Washington State study done,
43 approximately?

44 MS. STALBERG: It was in the -- I think it was late
45 '90s, like '97 on. And I can confirm that, if
46 you'd like. And then I followed up with Bruce --
47 Kirk Krueger and Bruce Crawford, of Washington

1 State, as well, in the recreation and conservation
2 office, and they were putting together a -- Bruce
3 Crawford was one of the leads for putting together
4 a state-wide monitoring program, and this
5 monitoring program was to gain information on the
6 habitat status, the fish population status, water
7 quality status, so that that information could
8 inform their **Endangered Species Act** listings and
9 recovery measures.

10 And the -- so Bruce Crawford's work, they
11 looked at developing a framework for, I think it
12 was, something like 22,000 monitoring sites across
13 the region, a highly statistical way of monitoring
14 through an EMAP, environmental monitoring
15 assessment process, adopted in other states.

16 So highly statistically robust, but expensive
17 again. I think I've got a sheet with a summary,
18 here, on costs. They tried to get support -- so
19 it was a couple of million dollars over two years
20 for just the -- some of the habitat monitoring
21 work, not all of it. They tried to get funding
22 from the State legislation -- State legislature
23 for two or three years, and they were turned down.
24 It's just too costly. So they gained \$500,000 to
25 do a limited part of monitoring in Puget Sound.

26 So you can develop a really good program with
27 really good indicators and a framework, but you
28 need to have -- it can be a costly exercise. And
29 so that was factored into our deliberations, as
30 well, on selecting our suite of indicators.

31 Q Okay. And thank you for that.

32 MR. WALLACE: Mr. Registrar, just for the record, the
33 witness referred to a peer review process. Am I
34 correct that that's Exhibit 158, that workshop
35 report is referred to -- or provided?

36 MS. STALBERG: Yes, it is, thank you, yeah. And
37 working through the agenda with Dr. Hyatt and
38 Irvine, so we had the key reviewers, Carol Smith
39 that I mentioned, Dr. Carol Smith, from the
40 Washington State Conservation Commission, she was
41 one of the key reviewers, and we set up the agenda
42 like similar CSAP processes, where there would be
43 a key reviewer that would provide comments, then
44 the authors would provide a response, then there
45 would be a general discussion and moving through.

46 MR. WALLACE: Mr. Commissioner, the witness has also
47 referred to another document that I'm not familiar

1 with, I think relating to costing, a summary.

2 Perhaps that could be provided to participants?

3 MR. TIMBERG: I'll speak to the -- to Ms. Stalberg at
4 the break and I'll provide an update on that.

5 Q Ms. Stalberg, you stated in your will say
6 statement that the monitoring of habitat status in
7 using your indicators and benchmarks has not yet
8 begun. Do you have an update on that?

9 MS. STALBERG: In my interview with Mr. Wallace and
10 Lara Tessaro, they did show me a Harrison --
11 Harrison River Habitat Status Report, and I think
12 there were a number of different habitat status
13 reports relating to it. I believe that was
14 generated after my tenure. But in the quick
15 review that I had with them of the document, what
16 was helpful was that the individual, I think it
17 was a Ms. Pearson, a consultant, that generated
18 the work, she had gone even further in the habitat
19 status reports than what OHEB had noted as saying
20 they would undertake, if you recall, those two
21 habitat status reports per annum, per area, if
22 I've got that right.

23 So in Ms. Pearson's work, it appeared that
24 she had mined some of the literature out there,
25 and referring to the indicators within the
26 Stalberg, et al, report, she then pulled out
27 information relative to that. I didn't give an
28 exhaustive review of those documents, but I
29 thought that was promising in the sense that there
30 was some monitoring being started.

31 I don't know if that is being undertaken in
32 other areas and for filling in other habitat
33 status reports, and I also do not know the full
34 extent of what science might be doing in terms of
35 getting ready some of these habitat indicators,
36 like the coldwater refuge zone. I was able to
37 talk with Erland MacIsaac, one of our habitat
38 working group members, last week, and refreshing
39 my memory on some of the work, and he did mention
40 that they are starting to look at some of the
41 initiatives they've started within science that
42 might help advance some of the sockeye-related
43 indicator work. But he would be better able to
44 speak to actually what they have undertaken to
45 date.

46 Q Okay. Thank you. Moving onto monitoring
47 framework --

1 MR. WALLACE: It's, I notice, Mr. Commissioner, it's
2 11:10. Perhaps this would be a convenient time to
3 take the morning break, if Mr. Timberg's moving
4 on?

5 MR. TIMBERG: That's fine.

6 THE COMMISSIONER: Mr. Timberg, how much longer will
7 you be?

8 MR. TIMBERG: I expect -- I've got a few more questions
9 for Ms. Stalberg, and then I expect I'll go until
10 the lunchtime break.

11 THE REGISTRAR: The hearing will now recess for 15
12 minutes.

13

14 (PROCEEDINGS ADJOURNED)

15 (PROCEEDINGS RECONVENED)

16

17 THE REGISTRAR: Hearing is now resumed.

18 MR. WALLACE: Mr. Commissioner, for the record, Brian
19 Wallace, commission counsel, and I failed to
20 identify Lara Tessaro, junior counsel who is with
21 me this morning. Mr. Commissioner, just a couple
22 of housekeeping matters, for those who weren't
23 here earlier, we will be sitting today, tomorrow
24 and Thursday until 4:30. A reminder on cell
25 phones, that sound we hear is cell phones
26 interfering with the wireless microphone, so if
27 witnesses would turn off their cell phones,
28 please.

29 Mr. Lunn distributed this morning a hard copy
30 of an updated exhibit list. There are more
31 available at the front of the room if others
32 require them.

33 Just for the record, Mr. Commissioner, there
34 are a couple of exhibit duplications that I just
35 want to identify and these will be corrected and a
36 note made on the next version of the exhibit list,
37 but for the record, Exhibits 185 and the 207 are
38 identical. Because numbering would get far too
39 complicated, we're not going to do anything about
40 that. We're just going to identify the fact.

41 And second point is Exhibit 198 has -- is all
42 of two other exhibits, if you like, so pages 1 to
43 6 of Exhibit 198 are identical to Exhibit 134
44 which is the record of decision of the August 9,
45 2005 Regional Management Committee meeting and
46 pages 7 to 16 of Exhibit 198 contain a black and
47 white copy of Exhibit 170 which is the

1 presentation made to the August 9th, 2005 Regional
2 Management Committee meeting.

3 Thank you. Mr. Timberg?

4 MR. TIMBERG: Mr. Timberg on behalf of Canada for the
5 record. Mr. Commissioner, there were three
6 documents that were referred to in the morning's
7 testimony I'd like to clarify. First, the
8 document that Heather Stalberg spoke about which
9 was Canada's Tab 39, it has, I understand, been
10 marked already as Exhibit 206. I'd just like to
11 confirm that with Mr. Registrar.

12 THE REGISTRAR: That's correct.

13 MR. TIMBERG: Okay. Thank you. So that is Exhibit
14 206. Second, Mark Saunders in his testimony this
15 morning referred to a stock assessment framework
16 in 2004 and that has been disclosed. If, Mr.
17 Registrar, you could pull up CAN058266.

18
19 CROSS-EXAMINATION BY MR. TIMBERG, continuing:
20

21 Q And I'll ask Mr. Saunders if he can identify this
22 document.

23 MR. SAUNDERS: Yes, I can.

24 Q And can you explain what this document tells us
25 about stock assessment framework?

26 MR. SAUNDERS: Yes, Mr. Commissioner. This is a
27 document that I referred to that as of 2004/2005,
28 before we actually had the -- completed the
29 identification of the conservation units, this was
30 the description of our approach to stock
31 assessment in the Pacific Region. It's an
32 exhaustive document with a tremendous amount of
33 detail. I think it might be worth just having a
34 look at I believe it's Table 1, if you can scroll
35 down. I don't know the page number. I can give
36 you an example of the type of information that it
37 includes. No, it would be further down. Maybe
38 it's -- maybe it's an appendix table.

39 MR. TIMBERG: This is -- you want the CAN number? We
40 haven't got it marked -- oh, perhaps we can have
41 it marked as the next exhibit, Mr. Registrar.

42 MR. SAUNDERS: Is there an appendix table down --

43 THE REGISTRAR: Be Exhibit number 210.
44

45 EXHIBIT 210: Document describing stock
46 assessment in the Pacific Region
47

1 MR. SAUNDERS: It would be further up where it says
2 "part". Say we are at Part C, maybe Part A.
3 Sorry about this.

4 MR. LUNN: Further up?

5 MR. SAUNDERS: I think it's further up, yeah. Well,
6 why don't we just stay there. I'll try -- I think
7 I can re-look at this one. So this is an example
8 of an assessment framework for stock units and as
9 we've discussed earlier, Mr. Commissioner, we're
10 moving away from this idea and refining
11 conservation units as the unit of interest, so the
12 stock unit. And the first column identifies what
13 we were calling an assessment stock unit. I
14 forget what the "F" stands for. So you can see
15 various components of stock units. And then as
16 you move across, it provides information about the
17 background on that stock unit and I don't recall
18 the actual numerical values, but around
19 information to help prioritize our work around its
20 current status and other details to help
21 prioritize the work here. And then as you go
22 across the top there, you can see indicators,
23 extensive escapement, fisheries monitoring,
24 principle impacting fisheries, et cetera,
25 categorical status. So this is all the
26 information around, as we've described before, the
27 various programs -- whether we have an indicator
28 and extensive escapement and fisheries monitoring.
29 So this work is in the process of being updated to
30 -- instead of an AFSU on that left-hand column, we
31 would be talking about a conservation unit and
32 then undergoing a prioritization of work to be
33 done and as well as a description of it, and that
34 would constitute a stock assessment framework
35 going forward.

36 MR. TIMBERG: And for the record, we're at page 10 of
37 57 of Exhibit 210 and it's a Table 3 titled "Table
38 1 for Sockeye Assessment Framework Stock Units".

39 Q And can you clarify what AFSU stands for?

40 MR. SAUNDERS: Yeah, I know it's Assessment Framework
41 Stock Unit perhaps. Yeah, there it is, right in
42 the title.

43 MR. TIMBERG: Okay. Thank you. Second, Ms. Stalberg
44 discussed having brought with her a document on
45 Washington State monitoring program costing and
46 we've circulated, Mr. Commissioner, a copy of this
47 document and if perhaps this could be marked as

1 the next exhibit.

2 THE REGISTRAR: Two hundred and eleven.

3

4 EXHIBIT 211: Governor's Forum on Monitoring

5

6 MR. TIMBERG: And the top of the document it says

7 "Governor's Forum on Monitoring".

8 And finally, there was a document that Ms.

9 Stalberg mentioned on the conservation -- an

10 overview report of Cultus Lake and this has been

11 circulated, Mr. Commissioner, and it's titled

12 "Conservation Unit Template Cultus Lake Sockeye

13 Salmon" and the bottom, the date is October 2005,

14 and if this document could be marked as the next

15 exhibit?

16 THE REGISTRAR: Two hundred and twelve.

17

18 EXHIBIT 212: Conservation Unit Template

19 Cultus Lake Sockeye Salmon

20

21 MR. TIMBERG:

22 Q Ms. Stalberg, before the break you were talking

23 about what's happening next with respect to

24 habitat status and use of indicators and

25 benchmarks; is there anything else you had to add?

26 MS. STALBERG: Yes. Simply that we also want to

27 integrate Strategies 2 and 3, so integrating the

28 -- within the policy, Action Step 2.3 says

29 coordinate the monitoring efforts of the habitat

30 indicators with the ecosystem and Strategy 1 fish

31 population status, so what we do want to do is

32 coordinate all of the different kinds of

33 monitoring and so we need to determine what those

34 Strategy 3 indicators will be and then develop a

35 monitoring framework.

36 Q Okay. Thank you.

37 MS. STALBERG: That will help to guide actual

38 implementation.

39 Q Okay. And you -- and can you describe how a guide

40 would benefit monitoring efforts?

41 MS. STALBERG: Framework -- a monitoring framework?

42 Q Yes.

43 MS. STALBERG: So a monitoring framework lays out what

44 indicators are employed where, what intensity.

45 Are they sampled? Is it once a year? Twice a

46 day? It can identify who does what, so for

47 example, Mark Saunders last week talked about the

1 number of stream-keepers out there, but they may
2 only be interested in monitoring certain
3 indicators and -- or the department is more suited
4 to provide data monitoring on certain indicators,
5 like those sockeye ones through our sockeye
6 research group.

7 So you need to start generating agreements on
8 who's going to do what and then really
9 importantly, you need to figure out well, what are
10 the data standards, where is it going to go, the
11 reporting. And there's also -- you want to make
12 sure that you address ownership of the data
13 because there have been concerns expressed to
14 myself through consultations and working with
15 different groups, like First Nations, on
16 sensitivity around TEK, as well as stream-keepers
17 on, say, the misuse of data that has been
18 generated by them in the past. So you need to
19 work out these details in generating your
20 monitoring framework.

21 Q Okay. Thank you. Moving on to Action Step 2.4,
22 were there any other initiatives piloted to serve
23 -- or were there any pilots initiated to serve
24 Action Step 2.4?

25 MS. STALBERG: Yes. So again, Mark Saunders last week
26 mentioned the Living Rivers Program where there
27 was provincial funding generated to support
28 salmon, protect salmon resources within the Fraser
29 basin. So way back in July '06 Dr. Hyatt had set
30 up a workshop in Washington with a number of U.S.
31 scientists on ecological indicators and different
32 programs and one of the participants was a
33 gentleman called Steve Katz of NOAA, so the
34 National Oceanographic and Atmospheric Agency, and
35 he was, if not leading, coordinating a program
36 called the Pacific Northwest Aquatic Monitoring
37 Program.

38 And I followed up with him because he was a
39 wealth of information on doing really what
40 Strategy 4 is requesting, which is how do you
41 bring together a diverse group, diverse parties,
42 that are involved in salmon monitoring and try and
43 make that information accessible, more readily
44 accessible, so that you can more quickly generate
45 things like habitat status information and build
46 efficiencies into your program. So that was
47 pulling together tribes and state employees, state

1 information and other parties.

2 So I followed up with him and gained some
3 lessons learned, as well as going through their --
4 their portal and website and seeing how they
5 depicted information. So I generated a proposal
6 on how to do something similar and met with Coral
7 DeShields, who was the -- one of the Fraser Basin
8 Council coordinators that was part of this Living
9 Rivers Program and she thought this was a good
10 idea, so she took this on and put it forward as a
11 -- again, a pilot really, but this is a very large
12 pilot for the whole Fraser Basin to try and start
13 -- how would we, as Action Step 2.4 calls for,
14 starting to integrate the different monitoring
15 programs that are going on out there and where
16 could that information be made best available.

17 Q Okay.

18 MS. STALBERG: So I worked with Coral DeShields on that
19 and over time that program evolved into what was
20 called the Aquatic Information Partnership and I
21 don't know where the status of that pilot is at
22 this time.

23 Q Okay. Thank you.

24 MS. STALBERG: I would -- sorry, I should have added
25 though by testing it out in a watershed size like
26 the Fraser, lessons learned could be then applied
27 to -- the Skeena watershed basin or the Columbia.

28 Q Right.

29 MS. STALBERG: The big systems, and it may be able to
30 evolve further.

31 Q Ms. Stalberg, can you comment on a presentation
32 that you made to -- with respect to habitat and
33 the connection between monitoring under the WSP
34 and the National Habitat Management Program?

35 MR. TIMBERG: Perhaps, Mr. Registrar, we could have
36 Exhibit 204 brought up.

37 Q And, Ms. Stalberg, do you recognize this document?

38 MS. STALBERG: Yes, I do.

39 Q And could you explain this presentation?

40 MS. STALBERG: Yes.

41 Q That's Slide 5 I think is of assistance.

42 MS. STALBERG: Thank you.

43 Q First of all, who did you make the presentation
44 to?

45 MS. STALBERG: This was to Ian Matheson.

46 Q And who is he?

47 MS. STALBERG: He was at that time the -- started as

1 the DG of habitat within Ottawa.

2 Q Okay.

3 MS. STALBERG: And he came to the Pacific Region to
4 learn more about our business.

5 Q Okay.

6 MS. STALBERG: And I was asked to provide information
7 on the Wild Salmon Policy.

8 Q So can you explain how you see the Wild Salmon
9 Policy interacting with the National Habitat
10 programs and policies?

11 MS. STALBERG: Yes. So this -- this was a -- sort of a
12 pitch on the benefits of the Wild Salmon Policy
13 and the linkages, the connections and disconnects
14 between the Habitat Management Program and we
15 talked last week about the disconnect, but I refer
16 here to the connections between the two. So the
17 Wild Salmon Policy, it calls for under Action Step
18 2.1 this characterization of habitat - identify
19 the highly-productive and limiting habitats.

20 Well, most likely in an upcoming session that
21 you're going to have with the Habitat Management
22 Program, a panel there, they'll be talking about
23 what's called the risk management framework.

24 Q Okay.

25 MS. STALBERG: That they now screen project proposals
26 through under what's called the Environmental
27 Process Modernization Plan. And this fits in --
28 it's quite relevant because risk, one of the
29 considerations in the risk management framework is
30 the sensitivity of the habitat, so by identifying
31 these under the Wild Salmon Policy it makes this
32 assessment much more readily done.

33 Q Okay.

34 MS. STALBERG: And then, as well, highly-productive and
35 limiting habitat information, it can be used to
36 prioritize the restoration and conservation
37 efforts, as per one of the outcomes to --

38 Q So you're drawing the similarities here between
39 the WSP and the EPMP?

40 MS. STALBERG: That's correct.

41 Q Okay.

42 MS. STALBERG: Or how -- really how the WSP can also
43 serve the Habitat Management Program.

44 Q Okay.

45 MS. STALBERG: And so one of the tenets of EPMP is to
46 streamline the regulatory reviews, make them
47 quicker, and by having the information on where is

1 the highly-productive habitat, what is it, more
2 readily available, it helps to streamline
3 regulatory reviews. It again can help industry
4 avoid certain areas and/or develop appropriate
5 compensation. And then the habitat status
6 information that's made transparent for proponents
7 through the posting that's -- that makes a more
8 predictable regulatory environment.

9 Q Okay.

10 MS. STALBERG: And then, as well, we talk about
11 partners perhaps delivering on the environmental
12 monitoring, there could be partners in industry
13 that also may be delivering.

14 Q All right. Well, thank you for sharing that.
15 I'd like to move on to the consultations
16 you've done with implementing Strategy 2 outside
17 of DFO with the various stakeholders. Can you --
18 can you describe that work that you've been doing?

19 MS. STALBERG: Yes. Perhaps we could refer back to
20 that ops deck just as a reminder for me, please.

21 Q Okay.

22 MS. STALBERG: That's a September 23rd, '08 operations
23 deck?

24 Q Right. That was at -- it's at 148 Exhibit 148,
25 please, and to Slide 9.

26 MS. STALBERG: Thank you.

27 Q And so does this document set out the external
28 consultations that you've done?

29 MS. STALBERG: Much of it.

30 Q Okay.

31 MS. STALBERG: It's not all, and I can speak to --

32 Q Okay.

33 MS. STALBERG: -- some of the aspects of it.

34 Q All right. So perhaps you could just clarify
35 what's not listed there.

36 MS. STALBERG: So what's not listed here would be the
37 consultations that I had with the Washington
38 State --

39 Q Right.

40 MS. STALBERG: -- folks on costing and framework
41 generation.

42 Q Right.

43 MS. STALBERG: Would you like me to provide a bit more
44 information on any of these components?

45 Q I think we're okay with the document. I'm just
46 trying to keep moving through this. With respect
47 to moving on then to implementation planning, new

1 subject, what efforts were made to integrate --
2 actually, I'd like to just move to -- sorry, my
3 question is this. It's sort of a conclusion to
4 Strategy 2 is what are some of your ideas, what
5 could be done to advance the implementation of
6 Strategy 2?

7 MS. STALBERG: To answer that, I'm going to go back to
8 the almost-asked question --

9 Q Okay.

10 MS. STALBERG: -- you were going to ask --

11 Q Certainly.

12 MS. STALBERG: -- to put into a bit of context.

13 Q Okay.

14 MS. STALBERG: Okay. So during -- if you recall last
15 week, there was a discussion with the operations
16 committee about where to take Strategy 2 and it
17 was well, within the last year of my tenure, let's
18 take a strategic work approach and work on
19 operationalizing what you can of some of the
20 approaches and processes that have been generated
21 to date for Strategy 2. So over the course of
22 that time, I worked extensively with the OHEB
23 managers on laying out pretty high-resolution work
24 plan that was here's what's needed to be done in
25 Strategy 2. So for each Action Step, what needs
26 to be done? And then worked with the OHEB
27 managers, said okay, now I'm going to look at all
28 of our government documents that relate to the
29 Wild Salmon Policy, everything from program
30 activity architecture, which is a very high-level
31 document within the government that guides actual
32 departmental activities down to the Pacific Region
33 Implementation Plan, the five-year plan for the
34 whole region, looking at risk management
35 assessments that were done per department within
36 branch, so looking at all of these various kinds
37 of documents and saying well, where does it say
38 that we're going to be doing Wild Salmon Policy
39 work or monitoring work --

40 Q Right. So what are your thoughts?

41 MS. STALBERG: Well, so pulling that information
42 together, then I continued with working with the
43 managers and we set up a number of criteria to
44 evaluate each of the steps that were needed to be
45 undertaken to complete Strategy 2 or to implement
46 Strategy 2. And through that process, the
47 outcomes were through a workshop, well, through a

1 number of meetings and then a workshop with all
2 the OHEB managers, they ranked these different
3 work plan elements and they pretty much -- the
4 majority came out really high and without very
5 much spread or difference between the ranking. So
6 it showed an intellectual commitment to the
7 program, but it didn't help with so much the okay,
8 well what's going to be done?

9 Q So -- so I'm just trying to get -- for the
10 assistance of the commissioner, can you share with
11 us what your thoughts are to advance the
12 implementation of Strategy 2?

13 MS. STALBERG: Okay. So I'm getting there. So then I
14 -- I was asked well, what are your suggestions,
15 Heather, for the -- based on the amount of time
16 that they had available - and they gave that to me
17 on what could be delivered around WSP, what are
18 sort of the essential elements and so I provided
19 some recommendations around that and that was
20 supporting the web-mapping application, generating
21 the habitat status reports, like identifying the
22 highly-productive and the restoration priorities,
23 so at least there would be some work continuing
24 and continued guidance for -- within the
25 department. It did not contain actually
26 undertaking going out and undertaking the
27 monitoring of the indicators.

28 So now, sorry, but to answer your question,
29 then what would my recommendations be? As far as
30 I know there has not been a change in the delivery
31 of the WSP where there has been a change from
32 delivery within existing resources. So my -- I
33 think of continuing the implementation of Strategy
34 2 in terms of a change agenda and a sustain
35 agenda, meaning what needs to be done to continue
36 to change the DFO program and then what needs to
37 be done to sustain that change? And again, in
38 existing resources, I'm not sure what can change.

39 Q So you're saying that funding is an issue; is
40 that --

41 MS. STALBERG: Well, it's -- as Dr. Irvine mentioned
42 last week, there's -- it's not just so much money,
43 as capacity to deliver as well.

44 Q Right.

45 MS. STALBERG: And how many bodies are within the
46 department to deliver, so certainly funding can
47 support more.

1 Q Right.

2 MS. STALBERG: But I would say that there's -- and, as
3 well, someone that is on the program after my
4 tenure and may be able to provide perspective on
5 my answer to you on this.

6 Q And who would that be?

7 MS. STALBERG: So there's Lisa Wilson, who is the
8 overall coordinator of the WSP.

9 Q Mm-hmm.

10 MS. STALBERG: And I don't believe that's a full-time
11 job.

12 Q Mm-hmm.

13 MS. STALBERG: And, as well, Melody Farrell, part of
14 her job, she is the habitat management
15 coordinator. She has within her work description
16 responsibility for the Strategy 2.

17 Q Okay.

18 MS. STALBERG: And working on the implementation team.
19 But for the change, I do think you need a WSP
20 champion.

21 Q Okay.

22 MS. STALBERG: And Mr. Saunders has talked about this I
23 believe in the development panel, that it would
24 be, say, at the RDG level.

25 Q Okay.

26 MS. STALBERG: But I think you can have a champion
27 that's sort of lower down in the organizational
28 structure, someone that has sort of more time to
29 go out and they -- they need to do works
30 externally and internally. So externally it's --
31 if partners are going to be monitoring, then how
32 are they inspired to do that kind of work and how
33 do we bring them together? So there is external
34 work that needs to be done, internally as well,
35 linking the strategies together, linking the
36 pilots so that we continue to build on the pilots
37 and have a better idea of the strengths and
38 weaknesses of different approaches for the WSP. I
39 think that continued in this -- and this champion
40 would need to have a broad understanding of the
41 departmental program because WSP affects them all,
42 right? So someone that can be -- is
43 inspirational, is an advocate and has a broad
44 understanding of the program.

45 And then as we talked about, to integrate
46 Strategies 2 and 3, we'll need to have the
47 Strategy 3 indicators undertaken and then we can

1 look to generating a framework. And that needs to
2 be done in consultation with others. That's not
3 just an internal exercise. And there's still work
4 to be done on some of these -- some of the
5 Strategy 2 work, as I mentioned, you know, where
6 are we at with science.

7 Q Right.

8 MS. STALBERG: So then in the sustain agenda, I
9 mentioned last week the disconnect with the
10 Habitat Management Program, that environmental
11 monitoring isn't on -- within the fish habitat
12 management policy. Now that policy is under
13 review currently, so it is -- it could be helpful
14 if within these broad national guidance documents,
15 these policies, that there is embedded within
16 there sort of reference to or opportunities to
17 support environmental monitoring. Not necessarily
18 committing the department to deliver it all, but
19 how can it be factored in? Because again, we're
20 talking -- we've been talking about the pace of
21 implementation --

22 Q Right.

23 MS. STALBERG: -- but it's based on current resourcing.
24 If more dollars are going to be gained, probably
25 the most likely place is nationally and it needs
26 to fit within a national agenda. And I don't -- I
27 think it's -- you would need to ask the question
28 about, you know, prioritizing programs to someone
29 more senior than myself. It's -- I don't think it
30 would be appropriate for me to say apply "X"
31 dollars or shift resources from that program to
32 this --

33 Q Right.

34 MS. STALBERG: -- program because say an RD, a regional
35 director of OHEB --

36 Q Okay.

37 MS. STALBERG: -- or an RDG would have a better
38 perspective --

39 Q All right.

40 MS. STALBERG: -- on the programs delivered.

41 Q Thank you very much. Those are all your
42 recommendations, Ms. Stalberg?

43 MS. STALBERG: Yes.

44 Q Thank you. I'd like to turn to Strategy 3 and Dr.
45 Hyatt, you've discussed in your will-say some of
46 the external forces that led to the inclusion of
47 ecosystem values in Wild Salmon Policy. And this

1 is on -- first of all, I guess, Dr. Hyatt, were
2 you involved in the development of the Wild Salmon
3 Policy?

4 DR. HYATT: I was involved in reviewing some of the
5 drafts and providing commentary on some of the
6 elements under the various strategies.

7 Q Okay. And so then my question is you've discussed
8 in your will-say some of the external forces that
9 led to the inclusion of ecosystem values in the
10 WSP. Were there any forces internal to DFO?

11 DR. HYATT: Oh, I think that in earlier testimony,
12 panels have identified the development of the WSP,
13 but it -- it didn't spring sort of *de novo* out of,
14 you know, a context that had no history or other
15 activity to it. There are external forces
16 certainly where groups were looking for the
17 development of a Wild Salmon Policy, but there
18 were lots of internal developments that Fisheries
19 and Oceans Canada was involved with, as well. For
20 example, the Slaney et al paper which was one of
21 the, you know, significant systematic assessments
22 of the status of anadromous salmon and trout in
23 B.C. and the Yukon, that wasn't just an externally
24 developed enterprise. That was an enterprise that
25 I actually led as a DFO representative and as a
26 member of the American Fishery Society. So we
27 actually joined causes to do that major stock
28 assessment and to look at the status of anadromous
29 salmon and trout in B.C. and the Yukon which had
30 not been systematically examined for something on
31 the order of about 40 years. And you have to go
32 back to the late '50s or early '60s for such an
33 assessment.

34 Q For the assistance of the record, that's entered
35 as Exhibit 188, that paper.

36 DR. HYATT: So that assessment really provided impetus
37 not only externally but also internally in the
38 department, to begin to look at how we might do
39 business in a new way, what our essential units
40 for conservation would be. And the Wild Salmon
41 Policy has been characterized as a new way of
42 doing business and it certainly is. In the -- I
43 was the second author on the Slaney et al paper
44 and in that paper, there were over 9600 local
45 salmon populations of five species distributed
46 across no less than 2500 rivers, streams and lake
47 locations in British Columbia and the Yukon. And

1 each of those at that point was subject to a
2 separate assessment and a consideration of what it
3 said about the status of wild salmon or trout.

4 By contrast, under the Wild Salmon Policy you
5 now have something on the order of four hundred
6 and -- 400-plus conservation units that have a
7 much more coherent foundation in terms of both
8 genetics and ecotypology under a standardized
9 method to characterize what they are. When Tim
10 Slaney and I were wrestling with these 9600
11 populations, the question was well how many of
12 them are just strays or kind of ephemeral
13 observations where the fish don't really have any
14 biological identity that Fisheries and Oceans
15 Canada should be especially concerned about. And
16 the Wild Salmon Policy and the development of the
17 conservation unit definition and methodology has
18 clarified this greatly and has also put us on a
19 trail to reorganize all of our regional data about
20 wild salmon around this conservation unit entity.
21 So we're no longer characterizing 9600 separate
22 entities in 2500 streams. We're now trying to
23 look at this in a more representative fashion in
24 order to cover these conservation units that have
25 real biological and evolutionary meaning because
26 of the way in which the methodology has been
27 handled.

28 Q Okay. That's helpful, Dr. Hyatt.

29 DR. HYATT: Now, the second element, and that was
30 moving towards Wild Salmon Policy and the
31 definition of conservation units, but the second
32 element of this pertains to the development of
33 ecosystem-based values and indicators and
34 objectives. In 2000 Brian Riddell and I co-
35 authored a paper and this paper's thesis was that
36 definitions are essential. Clarity of definition
37 is a requirement for the department to move
38 forward and make headway on any major new
39 initiative. And that particular paper took issue
40 with the separate definitions that were out that
41 the department wrestled with with respect to what
42 the definition of conservation was. And what we
43 pointed out in that paper is that you could be in
44 a meeting with commercial fishermen and with
45 ENGO's who were environmentally inclined and both
46 would agree that the number one priority for the
47 department was conservation. And everyone would

1 go away happy, thinking that they had met common
2 ground.

3 But in fact, the devil's in the details and
4 so if you drilled down to find out what each had
5 as their definition of conservation, one would
6 find that these were disparate definitions. On
7 the one had, you could have conservation of the
8 biomass of production of salmon which is what is
9 required to sustain the commercial fishery in the
10 short run, but that doesn't necessarily in the
11 short run have to include the conservation of
12 biodiversity. That is a different definition.

13 And so unless you make these definitions
14 perfectly clear, you can end up with enormous
15 confusion and working at cross-purposes. And so
16 under -- within the Wild Salmon Policy, one of the
17 tasks in terms of moving from development to
18 implementation, and one of the tasks that fell to
19 me, was to ensure that the phrases ecosystem
20 values and ecosystem indicators or ecosystem
21 objectives and ecosystem-based management of wild
22 salmon, to make it clear what that actually
23 entailed.

24 MR. TIMBERG: That's helpful. So perhaps, Mr.
25 Registrar, we could bring up Exhibit 8, the Wild
26 Salmon Policy, and go to page 23 and look at the
27 language of Strategy 3.

28 Q And Dr. Hyatt, I'll ask you to comment on the
29 language of Strategy 3 and how that operates.

30 DR. HYATT: Well, the first thing that one has to
31 appreciate about Strategy 3 is that the full
32 exposition of definitions was not provided within
33 the policy. I mean, some definitions were
34 provided, but they were very generic. So, for
35 example, and ecosystem, if one looks at the
36 definition that had been provided in the glossary,
37 and I'll just refer to it quickly. I don't think
38 we need to necessarily go there in the document.
39 But it says:

40
41 An ecosystem is a community of organisms and
42 their physical environment acting as an
43 ecological unit.

44
45 Well, that's well and good, but it still leaves
46 open a huge range of combinations for what that
47 actually involves. It provides no real substance

1 in terms of the detail for something that can be
2 clearly identified and then implemented. What
3 actions would one do with the myriad of
4 combinations of ecological, you know, physical and
5 biological entities that operate as a unit? There
6 are literally thousands or hundreds of thousands
7 of combinations of such entities.

8 So that lacks the kind of clarity that is
9 required in order to move ahead with
10 implementation of something like Strategy 3.

11 Q So what work have you done with -- to deal with
12 that?

13 DR. HYATT: Well, what I did with it was to go back to
14 first principles and say that in order to deal
15 with Strategy 3, we were given a number of
16 directives by the Wild Salmon Policy. One of them
17 is to integrate Strategies 1 and Strategy 2, so we
18 have to integrate what's being brought forward by
19 way of definitions, objectives and indicators in
20 those two strategies, bring it forward to Strategy
21 3 and then Strategy 3 also had to define some new
22 concepts and provide some new definitions in order
23 to make practical headway.

24 And so in the October 8th, 2009 concept
25 framework that I developed for the operations
26 committee, that was the first time a more or less
27 complete framework with definitions and with the
28 key elements that it would take to move forward on
29 Strategy 3, that was the first time such a
30 construct had been presented.

31 MR. TIMBERG: Okay. Perhaps, Mr. Registrar, we could
32 have Exhibit 186?

33 Q And Dr. Hyatt, if you could take us through
34 perhaps starting at Slide 5 and if you could
35 clarify the work done on ecosystem objectives and
36 indicators?

37 DR. HYATT: So starting from the directions that the
38 Wild Salmon Policy provides in general, because in
39 order to look for guidance from the Wild Salmon
40 Policy, it's necessary to go through virtually the
41 entire document. What you will find is that
42 there are numerous references at various places
43 under Strategies 1 and Strategy 2 to ecosystem
44 values and objectives or indicators. And so it's
45 necessary to kind of go through the entire policy
46 and then begin to boil it down to create some
47 clarity.

1 Now, ecosystem based management under the
2 Wild Salmon Policy acknowledges that ecosystems
3 influence salmon and we've known that for a long
4 time. The department's business in terms of
5 looking at habitat has been largely conditioned
6 upon that view of the world. But the second is
7 more novel. And that is there's a body of science
8 that had been generated over the last ten to 15
9 years that was understood qualitatively decades
10 ago but nonetheless it had progressed up to the
11 point where it was worth considering that salmon
12 actually also influence ecosystems.

13 So we manage salmon, I mean, one of the key
14 models we use to manage salmon by is Bill
15 Ricker's, Dr. Bill Ricker's famous stock recruit
16 model. Now, one of the interesting things about
17 that model is that it does not acknowledge that
18 there is any connection between the parents of
19 salmon and their offspring other than the
20 generation of offspring by parents. It says
21 there's no other connections that are of any real
22 importance.

23 Now, Dr. Ricker understood that this wasn't
24 true, that this was an over-simplification. In
25 fact, if you read many of his works, you'll find
26 it -- some rather interesting documentation of
27 other views of this. But that model has been the
28 prevalent model by which we manage salmon
29 populations. And what it failed to acknowledge is
30 that there are connections between the current
31 generation and the next generation, not only in
32 terms of that next generation originating from the
33 parent generation, but also in terms of nutrients
34 and energy that the parent generation brings back
35 into watersheds and thereby influences the
36 productive capacity of habitats.

37 So in a sense, the productive capacity of the
38 habitats is conditioned by the death of the
39 parental generation and whether this matters
40 greatly or only in minor ways depends very much on
41 the space and time variability of how ecosystem
42 productivity, particularly in fresh water, is
43 controlled in the landscape. There are locations
44 where nutrient limitations are acute and were
45 clearly the parental generation contributions to
46 this matter greatly to ecosystem function and to
47 the next generation. There are other places where

1 they're much less acute and so it will matter
2 less.

3 So Wild Salmon Policy requires that we begin
4 to provide the science basis not only for -- on an
5 ongoing basis how ecosystems influence salmon, but
6 also for where and when salmon influence the
7 ecosystems themselves. And finally, the third
8 element of this is that DFO's sectoral activities,
9 and by sectoral activities I mean those activities
10 over which we have some authority and control and
11 responsibility, activities such as salmon harvest,
12 aquaculture, salmon enhancement, habitat
13 protection, those are sectoral activities which
14 have specific events associated with them and that
15 these activities influence both salmon and the
16 ecosystems on which they depend. And so one of
17 the obligations that DFO has as an organization
18 with the emergence of Wild Salmon Policy is to
19 examine those sectoral activities over which we
20 have authority and responsibility and determine
21 when, where and how they influence salmon and
22 their ecosystems such that we can manage those
23 activities. We don't manage fish or manage
24 ecosystems, we manage human activities and DFO has
25 a limited range of responsibilities here and
26 society has a much broader range of
27 responsibilities in which we hope they will join
28 with us, such that we actually manage salmon, wild
29 salmon populations for future generations in a
30 sustainable way.

31 Q So, Dr. Hyatt, could you, using this document, can
32 you explain what the ecosystem objectives and
33 indicators are under Action Step 3.1?

34 DR. HYATT: Well, if we could just scroll along here, I
35 think the next slide is Slide 7 that I could refer
36 to. Yes. Now, the approach to developing
37 ecosystem objectives and indicators -- first
38 there's a step that's missing from this slide.
39 The first thing one has to do is define under the
40 Wild Salmon Policy what a salmon or a salmonid
41 ecosystem is, because you can read through the
42 document and you will not find such a definition.
43 You will find reference to the fact that salmon
44 depend on fresh water and marine habitats but you
45 will not find any bounded definition of what a
46 salmon ecosystem is. And so it's essential to
47 start with that definition for clarity.

1 Next, because I am a -- I'm an applied
2 scientist and I'm always looking for the art of
3 the soluble, the art of the possible, not what is
4 impossible, but what we can do effectively. And
5 so it's important to define then operational
6 ecosystem units, things that fisheries managers
7 and habitat managers will be able to relate to,
8 understand and move in a way that they can take
9 action.

10 Next, you need to have a system of reference
11 states. If you're going to define operational
12 ecosystem units, ultimately you're going to have
13 to say something about the reference state,
14 because if the general objective is to maintain
15 ecosystem integrity, one needs to know exactly
16 what that means and how you would identify whether
17 you were moving towards it, away from it or were
18 at it.

19 The third is it's important to identify, as
20 I've already mentioned, sector-specific ecosystem
21 based management objectives and this isn't just
22 restricted to DFO. It ultimately applies, and the
23 policy projects that it will apply to First
24 Nations and to stakeholders in the resource.

25 Once you've done those steps, you then can
26 begin to focus on developing indicators and once
27 you have the set of indicators that will inform
28 these previous steps, you can develop a monitoring
29 plan.

30 I think the next slide may be Slide 9.

31 THE COMMISSIONER: Mr. Timberg, I'm sorry to interrupt
32 your examination.

33 MR. TIMBERG: Yes.

34 THE COMMISSIONER: You were to finish by 12:30. I have
35 no idea sitting here whether you're within a
36 minute of that or ten minutes of that, and we're
37 coming up to the lunch break. But it's important
38 for you to complete your -- or conclude your
39 examination so the other participants will have an
40 opportunity to ask questions of these witnesses
41 while they're available.

42 MR. TIMBERG: Commissioner, I'm not -- is it possible
43 to ask for an extension of that 15 minutes after
44 two o'clock? I'm not -- I'm not at this stage
45 going to be finished my examination at 12:30.

46 THE COMMISSIONER: Well, you're saying you need another
47 15 minutes? Is that what you're...

1 MR. TIMBERG: Yes.

2 THE COMMISSIONER: All right. Well, then we'll adjourn
3 now and if you could perhaps review your notes and
4 see if you can't wind it up in 15 minutes after
5 two o'clock.

6 MR. TIMBERG: Thank you.

7 THE COMMISSIONER: Thank you.

8 THE REGISTRAR: Hearing will now adjourn until 2:00
9 p.m.

10 (PROCEEDINGS ADJOURNED FOR NOON RECESS)

11 (PROCEEDINGS RECONVENED)

12
13
14 MR. TIMBERG: Mr. Timberg and Geneva Grande-McNeill for
15 Canada. Mr. Commissioner, I have one set of
16 questions for Mr. Hyatt and I have one general
17 question for the panel.

18
19 CROSS-EXAMINATION BY MR. TIMBERG, continuing:

20
21 Q Dr. Hyatt, if we could turn to Exhibit 186 page 8
22 and can you assist us as to how this illustration
23 helps with the definition of ecosystems?

24 DR. HYATT: Yes, I can. Thank you, Mr. Timberg. Mr.
25 Commissioner, the clarity of definitions is
26 important to the pursuit of the various strategies
27 under Wild Salmon Policy and the glossary
28 definition says ecosystems are groups of organisms
29 and their environment that interact as a unit, so
30 a salmonid ecosystem under the Wild Salmon Policy
31 consists of first a salmon conservation unit, so
32 those have been defined.

33 Secondly, the associated habitat elements and
34 habitat elements have been defined under Strategy
35 2 and habitat elements as defined under Strategy 2
36 are largely restricted to physical and chemical
37 traits of the environment, not biota, and so when
38 you invoke ecosystem, it brings in this third
39 element, that is other species that salmon
40 interact with. So that's a salmonid ecosystem,
41 one which includes all three components - habitat
42 elements, a salmon conservation unit, and then
43 other species that are strongly interacting with
44 salmon and so that's an important criterion to
45 establish just what ecosystem it is we're trying
46 to maintain the integrity of.

47 So there's one more slide, and if you would

1 move to the next one, I think this was up
2 previously. So -- could you enlarge that, Mr.
3 Registrar, please?

4 MR. LUNN: Just the diagram? Exhibit 186?

5 DR. HYATT: Yes, please. So this general definition of
6 ecosystem, there are at least when I prepared the
7 slide there were 457 conservation units from
8 Strategy 1, four to eight habitat types from
9 Strategy 2, which create at least 3244
10 conservation unit operational ecosystem units,
11 which is a very large number and obviously we're
12 not going to independently assess the integrity of
13 every one of those, but we need to put them into
14 an operational frame and so the familiar
15 operational frame we put them into is by life
16 history stage where one life history stage of a
17 conservation unit associated with its highly
18 productive or critical habitat such as either a
19 creek spawning environment or a lake rearing
20 environment, a river migratory corridor, an
21 estuary staging area, out onto the continental
22 shelf, two-way migratory and rearing area and then
23 to the offshore waters where there are summer
24 rearing and winter over-wintering areas on the
25 high seas.

26 And the point of this slide is that each
27 salmonid CU lives its full life history within a
28 nested set of ecosystems, so when we are asked to
29 address the issue of how to maintain ecosystem
30 integrity, there isn't a single ecosystem in
31 operational terms. There's a cluster of
32 ecosystems. Now, this makes -- this is an
33 important point in terms of DFO's ability to go
34 forward because in some areas such as in the -- in
35 a terminal fishing zone, an area in a terminal
36 inlet where we execute a fishery, we have full
37 authority to execute that fishery and to assess
38 the characteristics of the environment that that
39 life history stage is involved with.

40 But on the high seas, we don't -- we have
41 shared authority, so we have, for example, these
42 letters NPAFC, which stands for the North Pacific
43 Anadromous Fish Commission, where in international
44 waters we share authority with other jurisdictions
45 and so to assess integrity there implies a
46 partnership at an international level.

47 Within trans-boundary waters that involve

1 Canada and the U.S., we have the Pacific Salmon
2 Treaty, which again says that we must engage in a
3 partnership arrangement to sort out ecosystem
4 integrity in geographic areas that -- where
5 authority is shared by our two countries. When we
6 get into the domestic area, DFO has some areas
7 where it has full authority, but then as you move
8 up into watersheds, the Province of British
9 Columbia and the federal government have shared
10 authority and shared responsibilities over each of
11 these operational ecosystem units.

12 So what this emphasizes is that in order to
13 implement Strategy 3, we have some elements that
14 DFO is fully responsible for and has the authority
15 to pursue on its own, but we have many elements
16 under Strategy 3 where we will have to engage in
17 partnerships with the province, partnerships with
18 the United States or alternately once we get into
19 international waters, partnerships with other
20 nation states.

21 So we will be able to make headway on
22 identifying objectives within each of these zones
23 and in association with that indicators of
24 ecosystem integrity within each of these zones,
25 but it will require joint action in many of these
26 zones and independent action by us in fewer of
27 them than the full set.

28 Q Thank you very much, Dr. Hyatt. I'd like to now
29 pose a question to -- first to Dr. Irvine and then
30 to the panel, and the question is as follows. If
31 the Wild Salmon Policy had been fully implemented
32 in 2009, would this have prevented the extremely
33 low returns of Fraser sockeye salmon that year or
34 would it have improved advice to management?

35 DR. IRVINE: Yes. Thank you, Mr. Timberg. Yeah, I'd
36 like to -- I guess the answer to that is no and
37 yes, so the answer to the first question would be
38 no and the answer to the second question would be
39 yes, but let me elaborate. So the Wild Salmon
40 Policy is -- it's a complex policy, but in essence
41 it's about protecting diversity. So both
42 Objective 2 in the policy and Strategy 2 are both
43 about the conservation of habitat diversity. They
44 both include components of that.

45 And so when we protect habitat diversity,
46 which is what Heather Stalberg was talking about
47 earlier, it's important to recognize that we're

1 not -- we're trying to protect a range of
2 different habitat types, so it's not only -- you
3 don't want to just protect the good habitat. You
4 also want to protect the marginal habitat, the
5 habitat that is of use at the current time. It
6 may not be -- sorry. Am I coming through?

7 UNIDENTIFIED VOICE: Yes.

8 UNIDENTIFIED VOICE: Yes.

9 DR. IRVINE: Yes. Okay. So anyway, we're talking
10 about the protection of habitat diversity. Now,
11 the reason we want to do that is that it's -- by
12 having diverse habitat, that allows for the
13 development of adaptations for the different
14 habitats. So this is not only by salmon, but it's
15 basically by all of the critters in the ecosystem.

16 So when you protect habitat diversity, then
17 what you're doing is you're creating or protecting
18 biodiversity. So that includes the diversity of
19 salmon, but also the diversity of other species,
20 other ecosystems. And the reason we do that is to
21 act as an insurance policy. So by having salmon
22 that are adapted for variable environments, this
23 essentially creates kind of an insurance that the
24 salmon are likely to be able to survive during
25 periods of climate change or some other change.

26 Now, so that's kind of the basis of the Wild
27 Salmon Policy. Now, where that relates to what's
28 going on with Fraser sockeye, I think, Mr.
29 Commissioner, you were exposed or you were
30 presented with some information probably during
31 the first week talking about Fraser sockeye and
32 the fact that, you know, the smolt adult survivals
33 of Fraser sockeye have been declining for about
34 two decades. The 2009 returns were anomalously
35 low, but it was -- it was along this trajectory,
36 but it was below the kind of forecast.

37 So would the Wild Salmon Policy, if it was
38 implemented, have resulted in more salmon
39 returning in 2009? Well, no. You know, the
40 policy wouldn't do that. What the policy is about
41 is protecting diversity so that the salmon are
42 more likely to be able to survive during periods
43 of climate change, but it won't result in huge
44 returns when you have a one-off event, as may have
45 occurred in 2009.

46 Now, I guess the way to think of it is if the
47 conditions in 2009 that generated the low

1 survivals were to continue for many years, if we
2 have diverse populations of salmon, that we are
3 more likely to maintain those populations.
4 Similarly, if the pattern -- the reasons for the
5 declining survival over the previous couple of
6 decades were to continue, we are more likely to
7 maintain salmon populations.

8 Now, it's kind of -- an interesting example
9 is actually Bristol Bay sockeye. So there was a
10 paper published by Ray Hilborn, who is a
11 university professor in Seattle and what they
12 looked at in Bristol Bay -- so Bristol Bay is a
13 very lucrative sockeye fishery area and they
14 essentially looked at the stock composition, the
15 stocks that are contributing to the fisheries in
16 the late 1990s and then by looking at DNA samples
17 through time, they went back and sort of
18 reconstructed what the stocks were that
19 contributed to this fishery in the early 1900s and
20 they found that it's really quite different. So
21 that the stocks that are contributing to the
22 fisheries right now are -- were not necessarily
23 the important stocks in the early 1900s.

24 So there's a really important lesson here,
25 that populations that may be favoured under
26 certain environmental conditions are not
27 necessarily the populations that will be important
28 in the future. So -- so the Wild Salmon Policy
29 isn't about sort of solving the problems of a
30 year, an individual year. It's really about
31 maintaining the diversity so that longer-term
32 changes can be -- at least the populations are
33 more likely to be able to survive when you have
34 long-term patterns.

35 Then your second question, I think was about
36 whether if the Wild Salmon Policy was fully
37 implemented would we have provided improved
38 information to fishery managers, something like
39 that, and that in part is related to some of the
40 stuff that Dr. Hyatt was talking about, but in
41 particular, Strategy 3.2, at least I'll sort of
42 give my bias here. And, I mean, I firmly believe
43 that we need to do a better job of incorporating
44 information from the marine environment in
45 improving our ability to understand salmon
46 survivals and predictions of unusual events as
47 occurred with Fraser sockeye in both 2009 and

1 2010.

2 When Dr. Hyatt talked earlier about Ricker's
3 stock-recruit curve, that's basically the number
4 of adults related to the number of recruits to the
5 next generation and, as he mentioned, there never
6 used to be a means by which one could include
7 environmental information in adjusting that
8 relationship. So this is an area of active
9 research. We are not all the way there. But I
10 know that we are improving our understanding and
11 so I like to think that we will be able to predict
12 unusual events like what occurred in 2009 and 2010
13 more effectively in the future.

14 We can do it retrospectively. I can give you
15 lots of ideas on why the numbers were low or high
16 in those two years. But the ability to do it, of
17 course, is to do it in advance, to document your
18 predictions, publish it and then show that it
19 stands the proof of time.

20 Q And just -- I'm cognizant of the time. It's 2:15,
21 so your answer to the second part of the question
22 as to whether the full implementation of the Wild
23 Salmon Policy in 2009, would it have improved
24 advice to management? What's your answer to that?

25 DR. IRVING: Well, the answer to that is yes, but I
26 think it's really about our improved understanding
27 of the processes controlling survival for Pacific
28 salmon. And then Action Step 3.2 is where we're
29 trying to do a better job of including information
30 on marine linkages to salmon survival into the
31 annual salmon fishery management cycle, and so
32 that's one of the -- that's where we're going
33 right now.

34 MR. TIMBERG: Thank you. Mr. Commissioner, that's all
35 my questions.

36 THE COMMISSIONER: Thank you, Mr. Timberg.

37 MR. WALLACE: I have next in cross-examining, Mr.
38 Leadem for the Conservation Coalition, please.

39 MR. LEADEM: For the record, Leadem, initial T.,
40 appearing for the Conservation Coalition.

41

42 CROSS-EXAMINATION BY MR. LEADEM:

43

44 Q Dr. Holt, I will be exclusively referring you to
45 your paper which has been marked as Exhibit 184
46 that you co-authored with Sue Grant entitled
47 "Fraser Sockeye, Wild Salmon Policy Evaluation of

1 Stock Status: State and Rate".

2 I note that of the 26 accessible CU's that
3 seven of them consistently were found to be in the
4 red status zone on most of the metrics; is that
5 correct?

6 DR. HOLT: On some of the metrics, yes.

7 Q Yes. In your paper -- and I can take you there.
8 In the interest of time, I'm going to read it and
9 ask you if you agree with it.

10

11 Of seven CU's that were consistently in the
12 status red zone across most, if not all,
13 metrics.

14

15 Is the way the paper reads at page 89.

16 DR. HOLT: So this was a draft version of the paper,
17 and on -- based on those preliminary analyses,
18 that was the conclusion.

19 Q Yes.

20 DR. HOLT: However, after review with the Salmon Sub-
21 committee, we're reconsidering some of those
22 metrics, so -- because it became apparent that we
23 weren't -- that we were making inappropriate
24 assumptions for some of those analyses and that
25 they may be biasing the analyses. So I wouldn't
26 -- it's not clear to me that those assessments
27 would stay the same through all those revisions.

28 Q I understand that.

29 DR. HOLT: So I can't agree to that statement now.

30 Q All right. In terms of the bias that you spoke
31 to, would the bias concern those seven specific
32 CU's, or were they other CU's?

33 DR. HOLT: I'd have to go through the paper and
34 identify them specifically. One of the major
35 revisions that pertains to my contribution to the
36 paper had to do with addressing time-bearing
37 productivities. So considering the fact that
38 productivity has declined over time and revising
39 one of the models that estimated benchmarks on
40 abundances.

41 So without doing that analysis, I don't know
42 how those benchmarks would be changed. I haven't
43 had a chance to do that re-analysis yet.

44 Q I understand that. I think for the benefit of our
45 understanding of where these -- the seven CU's
46 that were identified in the paper, at any rate,
47 within the red zone, status red zone, I was

1 wondering if we could take a look at the map
2 that's on page 6 of that document that shows the
3 actual -- some of the significant conservation
4 units. I was wondering if we could start with the
5 seven that are delineated, within the confines of
6 the paper at any rate, and if we start at the
7 north, if we can highlight Takla-Trembleur, that
8 was one of the CU's that was identified in the
9 paper as within the status red zone, was it not?
10 DR. HOLT: I'd have to look at the list.
11 Q All right. If you want to take a look at the
12 list, it's at page 89. Do you have a hard copy in
13 front of you, 'cause that would save us some time.
14 I can show you my hard copy.
15 DR. HOLT: I just want to clarify one point here, that
16 I was the primary author on part of the
17 methodology and not on the overall assessments.
18 That was really Sue Grant's work.
19 Q I understand that. I understand that.
20 DR. HOLT: I can provide as much as I can on specific
21 questions about the assessment, but really my
22 contribution to this was on the methodology for
23 accounting for time-bearing productivities.
24 Q No, I appreciate that. But in lieu of Sue Grant,
25 you're a co-author, and so you're here and
26 available.
27 DR. HOLT: Yes.
28 Q So you're the only one I can ask questions of
29 concerning this paper at this time.
30 DR. HOLT: And I'll do my best to answer.
31 MR. LEADEM: Thank you, Ms. Gaertner.
32 Q So at page 89, the first full paragraph on the
33 page is -- delineates the seven CU's that were
34 consistently in the status red zone across "most,
35 if not all, metrics." And I'm just simply going
36 to read the list and then get you to confirm the
37 location on the map that we now show depicted.
38 This is at page 6. This is in the conclusions
39 portion of your paper.
40 DR. HOLT: Takla-Trembleur, Bowron, Nahatlach.
41 Q Nahatlach.
42 DR. HOLT: Taseko, Cultus, Widgeon and Kamloops.
43 Q All right. So I wanted to now draw your attention
44 to the map and our technician has highlighted
45 Takla-Trembleur at the north, and that's part of
46 the Early Stuart management group, is it not?
47 DR. HOLT: Yes.

- 1 Q And then Bowron -- moving our way down south,
2 Bowron is part of the early summer management
3 group, correct?
4 DR. HOLT: Yes.
5 Q Nahatlach, moving further south along the Fraser,
6 is part of the early summer group as well?
7 DR. HOLT: Yes.
8 Q If we go back over to the west slightly to Taseko,
9 that's part of the early summer management group
10 and also one of the seven; is that correct?
11 DR. HOLT: Yes.
12 Q Cultus, which we've heard a lot about before, is
13 actually fairly close to the U.S. border and very
14 close to Vancouver, that's one of the seven as
15 well, correct?
16 DR. HOLT: Yes.
17 Q That's also one that is currently listed by
18 COSEWIC as endangered, is it not?
19 DR. HOLT: Yes.
20 Q And then Kamloops Lake, going away over to the
21 east now, that's also one of the seven, and that's
22 part of the Late Summer group, is it not?
23 DR. HOLT: Yes.
24 Q And then Widgeon, it's not shown on the map, but
25 that would be close to the Pitt group. My
26 understanding is that Widgeon River type is a very
27 unique species with respect to the conservation
28 unit and that it actually spawns in a slough,
29 Widgeon Slough, that connects with Pitt Lake and
30 that, at some times, it will spawn in the lake at
31 low tides and it will come back and spawn in
32 Widgeon Slough at high tides. Is that correct, to
33 your knowledge?
34 DR. HOLT: I don't know the details about Widgeon.
35 Q It's in the paper at any rate. That's -- I'm
36 simply getting the information that I've just
37 given to you from your paper.
38 So at this state of our knowledge, would you
39 agree with me that subject to whatever may happen
40 with the CSAP process as it unfolds, that the best
41 science that we have presently have these seven
42 groups potentially being in the red zone; is that
43 right?
44 DR. HOLT: They're potentially in the red zone, but
45 there is -- there was no consensus among the group
46 that they should all be in the red zone.
47 Q Right.

1 DR. HOLT: There was uncertainty about how to combine
2 information across metrics. Ms. Grant made some
3 assumptions about how to combine that information
4 that was not shared amongst all members of the
5 Salmon Subcommittee. It was unclear how they
6 would -- assessment would come out after the re-
7 analysis, and so the intention was to finish the
8 re-analysis in the next 60 -- I think it was 60 or
9 90 days -- and then subsequently do a formal
10 review of -- a CSAP review of these 26 CU's with
11 the correct information so that we could then,
12 once we had the correct status on all of those
13 metrics, then look at them and provide an overall
14 assessment across them.

15 Q Yes. And I thank you for that. Presumably
16 sometime, then, within the next 60 days, we can
17 expect that we might see a revision of this paper,
18 and we might then have an opportunity to either --

19 DR. HOLT: Yes.

20 Q -- discuss this with you or Ms. Grant. Is that
21 fair?

22 DR. HOLT: Yes. Yes.

23 Q I think you would feel a lot more comfortable with
24 that approach.

25 DR. HOLT: Yes.

26 Q Would you? You mentioned that there's some degree
27 of uncertainty due to the potential for bias and
28 due to the potential for having to revisit some of
29 the datasets and taking a look at the metrics.
30 Given that there's some uncertainty, but still
31 given that we have some indication that we have
32 these seven groups that potentially could be in
33 the red zone, does not the precautionary approach
34 dictate to you, as a conservation scientist, that
35 you should take some steps to protect these
36 endangered -- potentially endangered conservation
37 units?

38 DR. HOLT: That's certainly the case, but within 60
39 days I think it's fair to say that we can do the
40 re-analysis, come up with a more accurate list,
41 and then proceed from that point.

42 Q Yes, and I fully appreciate that. I'm not asking
43 you to opine on what management decisions should
44 be done, but I'm simply asking for your opinion as
45 a scientist --

46 DR. HOLT: Yes.

47 Q -- faced with the necessity of applying

1 precautionary principles. In this context, would
2 it not mean that rather than just simply awaiting
3 the potential result of 60 days or the final
4 science which could actually cast something in
5 stone, that you would take a precautionary
6 approach and actually do something about these
7 seven potentially endangered CU's right now, and
8 at least convey that to the management people that
9 are going to be making those decisions within your
10 Ministry.

11 DR. HOLT: It's just not clear to me that -- I
12 understand the precautionary approach to not
13 provide uncertainty -- or give uncertainty as a
14 reason for inaction.

15 Q Yes.

16 DR. HOLT: Here we have a situation where we have
17 different metrics telling us different stories
18 about what their status is, different -- if we
19 make different assumptions in the model, one of
20 the major ones that we dealt with this meeting was
21 accounting for the cyclic dynamics of the stocks
22 and identity-dependant and directions between
23 cycle lines so that is we see these large cyclic
24 dynamics and it may be because of interactions,
25 competitive interactions between those cycle
26 lines. If we account for that, we can get a very
27 different status.

28 So if we -- and most scientists on Fraser
29 River, biologists, would say that those cyclic
30 interactions are biologically sound. If we -- and
31 if we follow that through and assess that as based
32 on that assumption, then a lot of these are
33 actually in the green zone. So then there's a
34 question -- we haven't come up with a consensus on
35 how to deal with the green zone when we account
36 for this biologically plausible hypothesis, and a
37 red zone on another status.

38 Q Yes. Yes, I understand that the science is in a
39 bit of a quandary as to where --

40 DR. HOLT: Yes.

41 Q -- to actually apportion these.

42 DR. HOLT: And so our hope is to provide assessments on
43 all four or five of these metrics and assumptions,
44 provide information for all, so you can get the
45 whole story and then provide that so that managers
46 can then decide how they want to prioritize
47 amongst those CU's so they can look at ones that

1 have more reds, for example, to put most of their
2 emphasis versus providing -- giving a list of all
3 seven. All seven of those might have a red status
4 in them.

5 Q But I come back now to this point, and I won't
6 belabour it. I'll ask it to you one more time,
7 and I'll put it this way to you: That if we're in
8 an era of uncertainty with respect to which of
9 these conservation units are in red zones and
10 which are not, which are green and which are
11 yellow, but that the preliminary evidence seems to
12 suggest that these seven, in particular, show that
13 they're potentially - especially with the smaller
14 CU's that are within this seven - are in danger of
15 being extirpated, wouldn't you take some concrete
16 positive steps as a scientist to identify that
17 fact to your Minister to allow your Minister to
18 make a determination on what conservation measures
19 ought to be employed today, rather than simply
20 waiting until the science is clear.

21 That, as we know, may not be within the next
22 60 days. It may be months or years hence.

23 DR. HOLT: I understand that it's important to be -- to
24 take steps despite the fact that we have
25 uncertainty. However, I also don't see it
26 worthwhile to take steps when we know that there
27 might be biases in these -- in the analyses.

28 Q All right.

29 DR. HOLT: You know, I understand that -- it's out of
30 my purview what the management actions will be.

31 Q Yes, I understand that.

32 DR. HOLT: I provide the scientific assessments behind
33 that.

34 Q Right.

35 DR. HOLT: Perhaps there's someone else who could
36 better answer that question.

37 MR. LEADEM: Okay. I thank you for your answers.

38 MR. WALLACE: Thank you, Mr. Leadem. Mr. Commissioner,
39 I may not have made this clear, but over the lunch
40 hour we discussed directing questions at Dr. Holt
41 first, and so, Mr. Leadem, I think will be back
42 once we've completed this round, probably
43 tomorrow.

44 Which brings us to Mr. Rosenbloom.

45
46
47

1 CROSS-EXAMINATION BY MR. ROSENBLOOM:
2

3 Q Yes, Dr. Holt. My name is Don Rosenbloom and I
4 appear on behalf of Area D Gillnet and Area B
5 Seiner. My questions at this moment in time are
6 exclusively directed to you in light of the
7 circumstances that you won't be here tomorrow.

8 Can I assume, Dr. Holt, from my review of the
9 agenda for this inquiry into the future that, at
10 this point in time, you do not -- you are not
11 invited back to this inquiry? In other words,
12 this will be your only appearance?

13 DR. HOLT: That is true.

14 Q All right. And that being the case, I do have a
15 number of questions for you, and a few of them
16 that I ask of you, if you feel that there is
17 somebody more appropriate to answer these
18 questions, either on this panel or indeed someone
19 that you know will be testifying at this
20 proceeding, I take no offence at you deflecting
21 the question to the person most able to answer
22 those questions.

23 Now, my first question to you relates to the
24 whole substance of the Wild Salmon Policy and, in
25 particular, the assertion that maintenance of high
26 biodiversity, all CU's, in other words, above
27 their lower benchmarks is necessary to maintain a
28 fully sustainable fishery for the Fraser sockeye?
29 And I assume you generally subscribe to that
30 approach, do you not?

31 DR. HOLT: Yes.

32 Q That being the case, my question to you is this,
33 isn't that fishery largely dependent on a
34 relatively small number of large stocks? Let me
35 start with that question. Do you agree?

36 DR. HOLT: That is true for the current period. As Dr.
37 Irvine mentioned a few minutes ago, it is possible
38 that the stock ratios may change over time so the
39 ones that are dominant now may be small in the
40 future, but other ones that are small now may
41 become dominant in the future

42 Q Right.

43 DR. HOLT: -- so maintaining that diversity is
44 important for the long run.

45 Q So you speak of -- I'm sorry, yes, so you speak of
46 Dr. Irvine's comments a few minutes ago about
47 Bristol Bay, do you not?

1 DR. HOLT: Yes, that was one example that he gave.

2 Q Yes, one example. Isn't it true that some of the
3 small stocks that are the main concerns for
4 sockeye biodiversity loss in the Fraser River, in
5 the Fraser, rear in smaller lakes like Cultus that
6 have no potential for ever replacing losses if
7 something bad should happen to the larger stocks?
8 And I assume -- maybe I shouldn't assume your
9 answer. What is your answer to that question?

10 DR. HOLT: I wouldn't necessarily say that. I think,
11 in the past, Cultus returns have been much, much
12 higher than they were now and could be relatively
13 commercially important, but there will be others
14 who would be more knowledgeable from the Stock
15 Assessment Section.

16 Q And who would that -- who would we be looking to
17 for that kind of answer?

18 DR. HOLT: Well, Arlene Tompkins is the head of the
19 Stock Assessment Section so she might know, or
20 Mike -- Mark Saunders -- Mr. Saunders might
21 provide other names.

22 Q All right. So I will direct that question to Mr.
23 Saunders to at least deflect it and inform us as
24 to who should be answering that question in
25 future. Following up on the same line of
26 questioning, isn't it true that if something
27 really bad does happen, for example, because of
28 climate change, that the smaller and less
29 productive stocks are likely to be the first to
30 go?

31 DR. HOLT: No, it's not. CU's were established to
32 maintain diversity so each CU will -- may have a
33 slightly different genetic, morphological, or life
34 history characteristic. Those CU's that are of
35 relatively small abundance right now may -- may be
36 specially adapted to increase their productivity
37 under different scenarios that may happen with
38 product -- with climate change, whereas other ones
39 may decline. So it's uncertain right now which of
40 those CU's might survive through climate
41 variability, climate change. It's not necessarily
42 the case that it's the dominant ones that will --
43 that have those specific characteristics that are
44 adaptive to climate change conditions.

45 Q I appreciate that's your evidence. I am very
46 intentionally putting these questions to you, as
47 these matters will come up later in the inquiry

1 with other witnesses and I wanted to hear your
2 answer, especially in light of the fact you're not
3 back here.

4 Another question on the same theme, if the
5 Wild Salmon Policy is not a policy to protect
6 biodiversity at all costs, but a practical policy
7 to ensure biodiversity, then why does the Science
8 backup for it not include explicit analysis of the
9 trade-off relationships between use rate, in other
10 words, harvest, and expected biodiversity loss,
11 instead of just specifying a set of benchmarks or
12 targets for conservation units?

13 DR. HOLT: That's an interesting question and it's one
14 that we've come up with, or across during
15 implementation. Not part of the initial policy
16 development, and I'm not the person to talk -- to
17 ask about why that wasn't part of it, but it has
18 come up in implementation.

19 Q And who do you suggest best can answer that
20 question?

21 DR. HOLT: Probably, other panel members.

22 Q All right. So I will float that question when the
23 other panel members are under cross-examination on
24 that question, which allows me to move to the next
25 question for you. I assume you're familiar with
26 the term, "sustainability over-fished" --
27 "sustainably over-fished," I should say, that
28 term?

29 DR. HOLT: Mm-hmm.

30 Q And that term, as I understand it, please correct
31 me if I misstate, is where a stock can easily be
32 stable under a given exploitation regime, but at a
33 stock size far below the one that would produce
34 maximum average yield. Is that a fair definition?

35 DR. HOLT: True.

36 Q All right. So my question to you is many Fraser
37 sockeye stock have been in that status for much of
38 the 20th Century; would you agree with that?

39 DR. HOLT: Yes.

40 Q All right. Do you see anything wrong, Dr. Holt,
41 from a biological perspective from allowing such a
42 condition to persist if the stock does not have
43 high harvest value?

44 DR. HOLT: From a population -- from a short-term
45 population perspective, there probably isn't any
46 short-term population concern, however, there may
47 be other ecosystem concerns, longer-term ecosystem

1 concerns where depleting, consistently depleting
2 populations, although they may be at sustainable
3 levels, may result in a lack of ecosystem inputs
4 from, for example, marine-derived nutrients from
5 salmon returns.

6 Q And would I be right in saying that is venturing a
7 little bit out of your expertise?

8 DR. HOLT: Exactly. So that would be Strategy 3.

9 Q Right, and I would put that to other panel members
10 --

11 DR. HOLT: Yeah. Yes.

12 Q -- wouldn't I? Thank you very much. But in the
13 context of your expertise, would you agree with
14 me?

15 DR. HOLT: So for the population dynamics, in the short
16 term -- sorry, I can't remember the specific
17 wording of the question. It -- can you remind me?

18 Q Yes. Could I remind you? I'll ask the question
19 again, that context. In the -- obviously,
20 focussed on the issue of sustainably over-fished,
21 my question is do you see anything wrong, from a
22 biological perspective, from allowing such a
23 condition to persist if the stock does not have
24 high harvest value?

25 DR. HOLT: So I'm not sure what's the high harvest
26 value part/portion of your question, but when you
27 ask whether there's a -- any biological problems
28 with that, so biologically, I wouldn't consider
29 those ecosystem components so there would be
30 biological problems with that from an ecosystem
31 perspective.

32 Q Yes.

33 DR. HOLT: Yes. From a population perspective, no.

34 Q Thank you. Why has your reporting of CU status
35 focussed only on stock size metrics, meaning
36 spawning stock relative to the stock that would
37 produce highest yield, and on trend metrics,
38 rather than also reporting exploitation rates
39 status relative to your estimates of the optimum
40 exploitation rate for the CU's?

41 DR. HOLT: And so you might be speaking in particular
42 about the Fraser River example?

43 Q Most definitely.

44 DR. HOLT: We chose not to -- our initial intention was
45 to use that metric on fishing mortality when
46 information on abundances was not available.
47 Fishing mortality relative to productivity can

1 give a bit of a one-sided assessment. For
2 example, if fishing mortality is in the green
3 zone, that is our fishing mortality is relatively
4 low compared to the productivity, so our fishing,
5 that doesn't necessarily mean that a CU is a
6 healthy CU, it may actually be an unhealthy CU.
7 And so it doesn't give a really full picture. Our
8 intention was to use that, especially in cases
9 where their abundances were low.

10 Secondly, the benchmarks on fishing mortality
11 have been under discussion, which of the specific
12 lower benchmarks to use and so because of the
13 debate over those lower benchmarks, we decided --
14 that's another reason why we decided to keep it
15 out of that analysis.

16 Q Doesn't reporting only stock size and trend
17 metrics tends to promote fixed escapement policy,
18 thinking and policy choice?

19 DR. HOLT: It's possible to identify a fishing
20 mortality that will result in a lower benchmark,
21 or a higher benchmark and so it's possible to do
22 that conversion. It doesn't limit us to using the
23 lower -- using an escapement policy. For example,
24 in the Fraser River, there is a FRSSI process,
25 which is the Fraser River Sockeye Spawning
26 Initiative that develops harvest control rules.
27 They use harvest control rules despite the fact
28 that they also understand lower and upper
29 benchmarks, which, as far as I understand, they've
30 incorporated into their analyses, but they --
31 they're not using escapement policies there,
32 they're evaluating harvest control rules. So I
33 don't necessarily think that it -- using those
34 benchmarks limits us to an escapement policy.

35 Q But it does promote a fixed escapement policy,
36 doesn't it?

37 DR. HOLT: I wouldn't say that. I've had discussions
38 with area managers who are considering benchmarks
39 on spawner abundances, but also looking at what
40 the fishing mortality that would be required in
41 order to meet that upper and lower benchmark on
42 spawner abundances, because we can convert between
43 a fishing mortality and spawner abundances. There
44 is a certain fishing mortality that we can apply
45 to assist them, under average conditions, that
46 will result in a level of spawners.

47 Q Mm-hmm. I come to the issue of density

1 dependence, and it will be pretty obvious as I
2 deliver these questions to you, that I don't have
3 a scientific background, but in my reading to
4 date, there are obviously issues of density
5 dependence, both in terms of freshwater and ocean
6 water. In fact, one of your mentors at Simon
7 Fraser University, Dr. Peterman, recently
8 published a paper that you're probably familiar
9 with regarding --

10 MR. WALLACE: Mr. Commissioner, I don't see this as a
11 Wild Salmon Policy issue. Dr. -- this matter will
12 be discussed in detail in harvest management.

13 MR. ROSENBLOOM: Well, I actually did relate this to
14 Wild Salmon Policy. Let me deliver the question
15 to you, and then if it's objectionable, believe
16 me, I will be told.

17 Q When the -- when a stock is found to be within the
18 red zone, and where, from a biological standpoint,
19 you, as a scientist, believes there should be a
20 management decision in respect to that stock, my
21 question is how is density dependence playing into
22 this whole equation? Are the managers who are
23 making decisions on harvest management based upon
24 a stock ending up in the red zone factoring in
25 analysis and scientific investigation of density
26 dependence?

27 DR. HOLT: So there is lots of different types of
28 density dependence, and they would -- they'd all
29 factor in different ways. We can think about
30 density-dependent mortality at lower spawner
31 abundances, where we have -- when we have really
32 low abundances, the productivity tends to be lower
33 than you'd expect. You get -- just because of,
34 for example, an abundance of predators that could
35 exert a stronger mortality at very lower
36 abundances. So that's one type of density
37 dependence. Another, I think, that you were
38 inferring from the work with Randall Peterman, Dr.
39 Peterman, is density dependence on the ocean when
40 there are large abundances of fish in the ocean
41 that compete for a common pool of preresources.
42 That may result in reduced body size and perhaps
43 increased mortality.

44 Q You see, where I go with this, and, again, doing
45 this without a scientific mind is can I assume
46 that as there is implementation of this Salmon
47 Policy, that you could imagine a situation where a

1 stock was found to be in the red zone --

2 DR. HOLT: Mm-hmm?

3 Q -- and where the remedial step that managers might
4 take would be to limit the escapement as opposed
5 to increasing the escapement because of the issue
6 of density dependence?

7 DR. HOLT: They -- repeat that again, they might want
8 to limit --

9 Q That in the circumstance where a stock was found
10 to be in the red zone, can you imagine a
11 management decision that lessened the escapement,
12 as opposed to increasing the escapement.

13 MR. ROSENBLOOM: My learned friend wants to interject.

14 MR. WALLACE: Mr. Commissioner, as I hear the question,
15 it's about what steps would be taken in the event
16 of the metrics being applied and determinations
17 being made with respect to -- on the assessment of
18 the -- of the particular CU. This panel is
19 dealing with the implementation of the policy,
20 which is the up to but not including the part
21 about integrating the scientific information
22 determined under steps 1, 2 and 3, with the
23 management decisions, which is, I think, the
24 proper place for Mr. Rosenbloom's question.

25 THE COMMISSIONER: I think, Mr. Wallace, what I would
26 like to know is whether someone with Dr. Holt's
27 expertise and her background and involvement with
28 the Wild Salmon Policy, whether she would have any
29 involvement or influence or contribution to the
30 management decision; in other words, that her
31 research and her work would somehow have found its
32 way into the -- the implementation of the policy
33 would have found its way into answering Mr.
34 Rosenbloom's question. If she doesn't have any
35 role to play in that regard then I understand your
36 objection. But if she has some role to play or
37 has some contribution to make or has some
38 information to provide the Commission, I think it
39 would be appropriate to hear if she does have an
40 answer to that question.

41 MR. WALLACE: Well, certainly the results of the
42 scientific determinations made under steps 1, 2
43 and 3 are what inform the management decisions
44 under 4. Whether Dr. Holt has any role in that is
45 perhaps an appropriate question. But getting into
46 the substance of those management decisions, which
47 is where I hear Mr. Rosenbloom going, seems to me

1 is better addressed to a later panel. And we can
2 certainly take those questions under consideration
3 and make sure that there will be an ability to
4 answer that sort of question --

5 THE COMMISSIONER: Right. My comment was just in the
6 context of knowing that Dr. Holt was not coming
7 back as part of the harvest management, I want to
8 make sure that if she has something to contribute
9 that this would be her opportunity to do so.

10 MR. WALLACE: Indeed. And I'm sensitive to that and
11 the line -- I think the way you framed the point
12 is a valid one, Mr. Commissioner, in that what is
13 the role of the scientist in how the decisions are
14 made under Strategy 4, as opposed to the judgments
15 that are made under that.

16 THE COMMISSIONER: No, I understand that. She's not
17 exercising the judgment. Mr. Rosenbloom?

18 MR. ROSENBLOOM: I just want my question answered. I
19 don't care who answers it in the sense that
20 there's no property in Dr. Holt answering it so
21 long as at the conclusion of this inquiry, this
22 question is answered by somebody in a position to
23 be able to answer.

24 THE COMMISSIONER: And that's why I made the comment to
25 Mr. Wallace. I want to make sure that your
26 question is addressed but I don't know yet whether
27 Dr. Holt is the correct person to do it or not.
28 So I want to give --

29 MR. ROSENBLOOM: Yes.

30 THE COMMISSIONER: -- her an opportunity to tell you
31 that.

32 MR. ROSENBLOOM: Thank you.

33 Q Dr. Holt?

34 DR. HOLT: I can -- I can address the scientific
35 underpinnings of that question and not the
36 management response.

37 Q Yes.

38 DR. HOLT: I think what you're getting at is density
39 dependence at larger abundances where -- when we
40 have high abundances, this may result in reduced
41 returns or recruitment because of compensatory
42 effects if what the scientific term is.

43 Q Yes.

44 DR. HOLT: And -- however, your question was framed in
45 terms of status in the red zone. And so those
46 types of effects would -- are unlikely to happen
47 in the red zone where we're dealing with lower

- 1 abundances where that type of overescapement -
2 another term they use - would likely not be a
3 consideration. In terms of the management
4 implications or applications, that would be the
5 harvest management panel.
- 6 Q But there could be an overabundance on a certain
7 year of the cycle and then in latter years --
8 subsequent years, a diminished return that could
9 be attributed to density-dependent issues, could
10 it not?
- 11 DR. HOLT: That could be the case but -- and then
12 questions of how you distribute the harvest
13 mortality amongst those four -- amongst cycle
14 lines. And now we're talking about density-
15 dependence among cycle lines. That's perhaps a
16 question for management.
- 17 Q Yes. Well, in fact, to give us an example, this
18 past year, if next year or the year following, we
19 have very, very low enumeration -- low stock
20 return, this could be an issue for investigation,
21 could it not?
- 22 DR. HOLT: Perhaps.
- 23 Q Yes, thank you. Now, I want to move into another
24 area and trying to move as quickly as I can. In
25 listening to your testimony, I get the impression
26 -- and again, I'm looking at this from 30,000 feet
27 up, as opposed to from the minutiae. You, as a
28 scientist, are missing a lot of data that you
29 would expect to have to pursue the kind of mandate
30 that you're being asked by DFO, for example, with
31 the production of the paper, the Grant-Holt paper
32 and things of that sort. You have testified, have
33 you not, that there is a deficiency in material?
- 34 DR. HOLT: True.
- 35 Q True. And that deficiency in material has, for
36 want of a better term, really prejudiced the
37 quality of the work you're being mandated to
38 produce for your department. Let's be frank.
39 Isn't that correct?
- 40 DR. HOLT: True. We have -- we've identified four
41 classes of indicators to assess status and -- for
42 many CU's. We do not have the information to
43 provide assessments on those. And I've talked
44 about that before.
- 45 Q And you did indeed and you're on record as saying
46 that. And then that has to lead to a series of
47 questions about why is that the situation and how

1 do we rectify it? And I think you would agree
2 with me that the reason that you are short the
3 kind of database, if I can describe it that way,
4 that you feel is really necessary, is because of
5 the lack of resources within DFO.

6 DR. HOLT: Lack of resources and for some of the
7 metrics, for example, those around distribution,
8 this hasn't historically been part of our mandate
9 to assess that and so we don't have a historical
10 time period. So even if we had resources right
11 now and started right now, it would take ten, 15
12 years to establish a baseline and -- and a time
13 trend in order to properly assess that.

14 Q What kind of timeframe would it take to bring the
15 department up to standard in respect of the areas
16 that weren't up until now their responsibility?

17 DR. HOLT: I am not clear how long it would take to --
18 I can talk about what length of time series we
19 would -- we should need. I'd say ten to 15 years
20 once we have a monitoring framework that we are
21 clear can -- is useful for the metrics that we
22 want to identify. But I'm not clear how long it
23 would take to develop and implement that
24 monitoring framework.

25 Q But all this is costly, isn't it?

26 DR. HOLT: Yes.

27 Q Very costly, isn't it?

28 DR. HOLT: Yes. I -- it would be costly to implement a
29 brand new monitoring framework that -- that
30 addressed all of those metrics. However, it is
31 possible to use information from other sources
32 that we haven't tapped into rigorously in the past
33 so that we may be able to address some of these
34 metrics without having to start from scratch? For
35 example, from community groups, Mr. Saunders spoke
36 about the Stream Keepers or other groups that
37 might be able to provide information to address
38 some of those gaps.

39 Q So you say you can maybe mitigate some of the
40 expenses by drawing on source information that is
41 not currently within DFO's database?

42 DR. HOLT: True.

43 Q But still you would agree with me that what you
44 are venturing into, you, as the department, is
45 venturing into in the implementations program is
46 going to cost a great deal of money. Do you not
47 agree?

1 DR. HOLT: That's -- that's likely the case. However,
2 I would say that it may be possible to adjust --
3 to assess status using, for example, Dr. Holtby's
4 synoptic survey where we can rapidly assess status
5 for all CU's using a subset of what he terms
6 "conservation indicators" so that we can identify
7 those priority CU's where we might have higher
8 concern and then focus our efforts on those so
9 that -- which may reduce at least some of the
10 initial costs for status assessment province or
11 region-wide. But in the long-term, I do see a
12 long-term extensive monitoring process program as
13 being valuable.

14 Q As not only being valuable but, in fact, as being
15 necessary for an effective implementation of this
16 program.

17 DR. HOLT: Mm-hmm.

18 Q Do you not agree?

19 DR. HOLT: True.

20 Q True. All right. Now, to that end, and forgive
21 me for this question, might any member of DFO have
22 advised you either in writing or orally that, as
23 employees of the federal civil service of the DFO,
24 you were to come before this panel and not call
25 for significant increased funding for the
26 implementation of DF -- of the Wild Salmon Policy?

27 DR. HOLT: No one said that to me.

28 Q Nobody said that to you?

29 DR. HOLT: No.

30 Q Thank you. Some of your colleagues have given
31 will says that will be spoken to tomorrow when
32 they're cross-examined about the lack of
33 leadership or -- that's actually a strong term --
34 leadership issues within DFO, as explaining
35 possibly why we are where we're at today, the
36 predicament we're in today, as opposed to full
37 implementation. I didn't see in your will say
38 anything on that question. But from your
39 perspective where you stand as a scientist playing
40 a major role in this, do you believe there is a
41 shortcoming in leadership?

42 DR. HOLT: I would say shortcoming in leadership to the
43 extent that we're assigning personnel and
44 resources towards assessments. You know, I've
45 been dealing with the Strategy 1 assessments. One
46 of the challenges in implementing that is lack in
47 -- a lack of people who have time to -- to

1 implement that work and to work through all of the
2 data issues and do those assessments. And so
3 perhaps under different types of leadership, our
4 personnel and/or resources would have been more
5 strongly allocated to that to get that work done?
6 Q And with a different leadership, there might be a
7 stronger initiative by that leadership to ensure
8 that the estimates of DFO through Treasury Board
9 provided ample financing so that this Wild Salmon
10 Policy could be implemented. Do you not agree?
11 DR. HOLT: That leadership may have provided more
12 resources to implement it. Is that --
13 Q That that leadership at a very high level --
14 DR. HOLT: Mm-hmm.
15 Q -- may not have carried out an initiative with
16 Treasury Board to ensure that this policy was
17 amply financed and implemented.
18 DR. HOLT: I don't think I can speak about -- to the
19 leadership at that high level in regards to
20 Treasury Board questions.
21 Q All right. We learned from the deputy minister,
22 Claire Dansereau, who testified in these
23 proceedings sometime ago, and we also learned from
24 documents that are going to go into evidence
25 tomorrow, although I'm happy to put them before
26 you today, that there's going to be a reduction in
27 budget of DFO up in the upcoming fiscal year
28 starting April 1st of -- her testimony was 5
29 percent, approximately.
30 I read in some documents that are going in
31 tomorrow that this is obviously a matter of
32 discussion within DFO in terms of the
33 implementation of the Wild Salmon Policy. Can you
34 tell the Commissioner, from your perspective,
35 again, on the front line, as a biologist carrying
36 out a high responsibility for this program, what
37 is the implication of a budget for -- for DFO that
38 is heading in a diminished *quantum*, as opposed to
39 increased *quantum* for funding of this program?
40 DR. HOLT: You know, it may result in delay in
41 implementation if funding is not directed towards
42 assessment -- assessment processes for
43 implementing the Strategy 1. You know, funds are
44 -- well, people -- personnel time is required to
45 make those assessments happen and so there -- so
46 there may be a link between what the funding is --
47 what funding is available and the personnel time.

1 Especially, a lot of -- some of those assessments
2 require or benefit from additional funds for
3 contractors to help through some of the data
4 analysis.

5 MR. TIMBERG: Mr. Commissioner, if I may interrupt. It
6 was my understanding of Claire Dansereau's
7 evidence that DFO was presently going through a
8 strategic review of 5 percent and that at the
9 conclusion of that strategic review, the monies
10 will be reallocated with a new focus on where DFO
11 spends its money. So it's my understanding she
12 did not say it was a 5 percent cut across the
13 board but instead it was a 5 percent cut to enable
14 a strategic review to happen with -- with those
15 monies.

16 MR. ROSENBLOOM: Well, the record will speak for
17 itself. I actually have it here somewhere in the
18 printed-up transcript. But in any event, it will
19 speak for itself.

20 Q Dr. Holt, in any event, clearly you'll agree with
21 me what we all see is a direction towards
22 diminished funding generally for DFO, as opposed
23 to the opposite, fair to say?

24 DR. HOLT: The question is, do I see that DFO that is
25 receiving less funds in the future?

26 Q Is that not the scuttlebutt within DFO?

27 DR. HOLT: That's information that you have just told
28 me so I can't --

29 Q Okay.

30 DR. HOLT: I don't have any...

31 Q That's -- that's fair enough. My last question
32 for you is a question that I will be asking to
33 each of the panel members, but you separately.
34 This Commissioner is mandated to advise the
35 Government of Canada regarding the complex issues,
36 obviously, of salmon and the critical years of '07
37 to '09. My question to you is this. The advice
38 that the Commissioner gives to the Government of
39 Canada may well be influential in Cabinet of the
40 federal government obviously taking a sober look
41 at where things stand with this Wild Salmon Policy
42 and where it might go.

43 Assuming for a moment, and I don't pretend to
44 have the slightest knowledge of where the
45 Commissioner's state of mind is, but assuming for
46 a moment that the Commissioner believes that this
47 Wild Salmon Policy is in the public interest, and

1 assuming for a moment that this Commissioner would
2 like to see implementation of the Wild Salmon
3 Policy within, let's say, a two to three-year
4 period, what advice would you be giving to the
5 Commissioner in terms of what you believe he
6 should be advising Ottawa to ensure that WSP is
7 indeed implemented more or less within two or
8 three years?

9 DR. HOLT: I'll speak to Strategy 1, how Strategy 1
10 could be implemented. So I would suggest that it
11 requires stronger collaborations between -- for
12 assessing status of CU's, stronger collaborations
13 between DFO and other organizations that have
14 information -- like more extensive information.
15 So that -- that's just a step that needs to --
16 needs to happen.

17 Q May we stop there for a moment before you move on?

18 DR. HOLT: Yeah.

19 Q This is all very important evidence. What is this
20 collaboration you speak of? Why has it not gelled
21 up to this point in time?

22 DR. HOLT: Because the data has been provided by
23 external groups. It has been inconsistently
24 collected and using a variety of techniques that
25 aren't well-documented. So it's very difficult to
26 combine that information with what -- what we
27 have.

28 Q Who's at fault for that?

29 DR. HOLT: No one's at fault. It's just the way it is.

30 Q Okay.

31 DR. HOLT: It's collected by different people. It's
32 not under DFO's mandate but there are
33 opportunities there. What we need is some time
34 and resources to be able to look through that data
35 comprehensively to see how we can use it in an
36 effective way. So we need -- I would encourage
37 those types of collaborations, as well as
38 resources and person -- not just short-term
39 resources but a longer-term commitment to having
40 people available to -- to do those assessments
41 over, say, a five, ten-year period, not just
42 short-term money in this fiscal year but from the
43 long-term commitments to resources to doing those
44 assessments.

45 Q Well, when you spoke of needing time, no one is
46 denying you the time, are they?

47 DR. HOLT: Yeah.

1 Q Pardon me?

2 DR. HOLT: No one is denying me the time.

3 Q Well, you said --

4 DR. HOLT: Yeah.

5 Q -- "We need that time." It isn't as if someone is
6 dictating that you're not going to be afforded
7 that time.

8 DR. HOLT: No, but there's pressure to implement this
9 quickly.

10 Q Yes.

11 DR. HOLT: My intention was to say there was that -- it
12 would be advantageous to have resources to build
13 capacity at DFO over the long-term, as opposed to
14 just short-term money for an individual project
15 here or there to do more of a quick-fix but
16 something more strategic and long-term.

17 Q Which, surely, Dr. Holt, speaks to the expense of
18 implementing this program, does it not?

19 DR. HOLT: True.

20 Q And the need for added resources, including
21 financial?

22 DR. HOLT: I can't argue, no.

23 MR. ROSENBLOOM: I have no further questions. Thank
24 you.

25 MR. WALLACE: Mr. Commissioner, it's 3:10 almost and
26 perhaps this would be a convenient time.

27 THE COMMISSIONER: Sure. In view of time, we'll take a
28 short, ten-minute break.

29

30 (PROCEEDINGS ADJOURNED FOR AFTERNOON RECESS)

31 (PROCEEDINGS RECONVENED)

32

33 MR. WALLACE: Mr. Butcher?

34

35 CROSS-EXAMINATION BY MR. BUTCHER:

36

37 Q Dr. Hyatt, I have a question to Dr. Holt. Because
38 mention has been made a number of times without
39 reference to the Slaney paper. You were a co-
40 author of this paper?

41 DR. HYATT: Yes, I was the second author of the paper
42 and I actually led the project that produced it.

43 Q And I think you've told us that this paper was the
44 first significant stock assessment done in 40
45 years?

46 DR. HYATT: It wasn't -- no, it wasn't the first
47 significant stock assessment done in 40 years.

- 1 There were many stock assessment papers done.
2 This was the first systematic stock assessment
3 paper that looked at all of the anadromous salmon
4 and trout populations within B.C. and the Yukon
5 that -- that had data records associated with
6 them. There -- there had been a previous quite
7 detailed assessment of just the five anadromous
8 salmon species by the International Pacific
9 Fisheries Commission back in the late '50s and
10 early '60s.
- 11 Q So what you're saying is this was the first broad
12 scope report since that IPFSC report in the
13 1950's?
- 14 DR. HYATT: It's the first of its kind that I'm aware
15 of certainly.
- 16 Q And Dr. Riddell earlier in his evidence made
17 reference to this. And I just wanted to identify
18 the -- sorry -- I can't read it on the screen. He
19 made reference in his presentation to some sockeye
20 extinctions that had occurred and made reference
21 to the fact that there were -- they were mainly
22 dam-related.
- 23 DR. HYATT: That's right. The majority of the sockeye
24 extinctions had occurred in the Columbia River
25 System in association with hydroelectric dam
26 development there, as well as in the Lower
27 Mainland area of B.C. in places like Alouette and,
28 oh -- and Coquitlam, yes, thank you, Jim.
- 29 Q And those -- there were also apparently, according
30 to the -- the right-hand column, first full
31 paragraph, also five stocks that became extinct as
32 a result of the Hell's Gate slide and subsequent
33 overfishing?
- 34 DR. HYATT: It's been sometime since I looked at this
35 paper but if that's -- if that's the --
- 36 Q I think you can see it there now.
- 37 DR. HYATT: -- what the text says then we were quite
38 careful about -- yes, we were quite careful about
39 -- this was attributed to various sources of
40 information, both expert interviews, as well as
41 great literature that we systematically went
42 through at the time.
- 43 Q So if I've got this right, the date of this paper
44 is 1993?
- 45 DR. HYATT: The paper was published in '96.
- 46 Q Okay.
- 47 DR. HYATT: The initiative and the -- the data covered

1 up to 1993.
2 Q So the -- by that point, there had been large
3 scale fishing for a hundred years?
4 DR. HYATT: There had been --
5 Q On Fraser -- on Fraser sockeye?
6 DR. HYATT: Yes, there had been an industrial fishery
7 for approximately a hundred years. Although one
8 might add there was a developmental period that
9 predated power blocks and internal combustion
10 engines. And so it wasn't until the -- roughly
11 the 1930s that a -- that a major industrial
12 fishery really took hold.
13 Q And the only extinctions during that century that
14 you know of are related to dams or the Hell's Gate
15 slide on the Fraser sockeye?
16 DR. HYATT: The only extinctions on the Fraser that I
17 know of -- there are others that I know of that
18 were not related to dams or to slides outside of
19 the Fraser.
20 MR. BUTCHER: That's the end of the background
21 questions, Mr. Wallace.
22 DR. HYATT: Thank you, Mr. Commissioner.
23 MR. BUTCHER:
24 Q Now, Dr. Holt, the first question that I have
25 relates to the number of conservation units that
26 you've identified. It's around 40 because, as I
27 understand it, there's some give-and-take.
28 DR. HOLT: Yes. Yes.
29 Q Now, Dr. Riddell had given evidence earlier that
30 he was of the view that there might be 230 lake-
31 based CU's and 34 river-based CU's. The question
32 I have for you is, can you explain why the number
33 is so reduced?
34 DR. HOLT: Was he perhaps speaking about the entire
35 Pacific region and I'm speaking about Fraser River
36 Watershed? So there are approximately 40 in the
37 Fraser River Watershed.
38 Q I see others nodding their head. Dr. Irvine, is
39 that the explanation that you think we have?
40 DR. IRVINE: Well, yeah, I think that's what Dr.
41 Riddell was talking about, the sockeye CU's in the
42 Pacific region.
43 Q The -- when were you commissioned, Dr. Holt, to
44 begin work on the paper that has become Exhibit
45 184?
46 DR. HOLT: I'm assuming that's the Holt *et al* 2009 CSAS
47 paper? If so, then beginning of 2008.

- 1 Q Was that immediately upon your employment with the
2 department?
- 3 DR. HOLT: Or are you speaking about Grant *et al*?
- 4 Q Yes. No, I'm speaking about Grant *et al*.
- 5 DR. HOLT: Oh, okay. So I started work -- let's see,
6 we had the review --
- 7 Q And maybe I've asked that question ineloquently
8 because I'm not so concerned about when you
9 started work on it but when was work started on
10 it? Do you know?
- 11 DR. HOLT: It was after Ms. Grant completed a
12 forecasting paper in the spring. So when she
13 finished that and finished all the reviews, then
14 she started on this one. So that would have been
15 in the summer --
- 16 Q Of which year?
- 17 DR. HOLT: -- at some point. Of 2010.
- 18 Q Okay.
- 19 DR. IRVINE: I can shed some light. I can't give the
20 exact answer but it would have been -- I thought
21 it was entered into evidence, the request for
22 scientific information related to that paper. I
23 could be wrong. But it would be around this time
24 of year when the annual request for scientific
25 advice get developed within the department
26 requests person.
- 27 DR. HOLT: It perhaps might be listed at the very end
28 of this document.
- 29 Q Okay. So every year, requests are made in the
30 budgeting process for particular scientific work?
- 31 DR. IRVINE: That's correct. I don't know that I would
32 call it -- yeah, I guess you could call it part of
33 the budgeting process, yes.
- 34 Q Was it before or after this Commission had been
35 called?
- 36 DR. HOLT: We started work on this after.
- 37 Q Is this the most significant piece of work that's
38 been undertaken with respect to the implementation
39 of Strategy 1?
- 40 DR. HOLT: Well, I'd say that the document by Holtby
41 and Ciruna would be the most significant
42 identification of the CU's. In terms of Strategy
43 1.2, the assessment, this is the most significant
44 work that's been peer-reviewed. I'd say a large
45 body of work has been done on Barclay Sound but
46 that has not been peer-reviewed.
- 47 Q And it doesn't relate to the Fraser. Is this the

1 most significant work on the Fraser that has been
2 done under Strategy 1.2?

3 DR. HOLT: 1.2, yes.

4 Q And that was only commissioned after this
5 Commission was ordered?

6 DR. HOLT: Yes, this work started after this Commission
7 started.

8 Q The document has "draft" written all over it and
9 you have told us that there are some concerns
10 about the accuracy of the data in there because of
11 biases that exist within the scientific data. Can
12 you tell us where this paper is at in terms of its
13 production schedule? Is this draft one? Draft
14 five? And are we expecting draft 20 or 25? And
15 when will we see the final version? That's a lot
16 of questions. I'm sorry for that.

17 DR. HOLT: So this was the draft submitted for review.
18 The -- we need to have a final completed version I
19 think it's within 60 -- either 60 or 90 days of
20 the -- of the review date, which was in November.
21 So 60 or 90 days would be in the middle of
22 February or end of February that a final one will
23 be submitted. And that -- that will be submitted
24 to the chair of the salmon subcommittee who will
25 then -- I'm not sure what the process is, if they
26 review it or approve it or how it works. Can --
27 Dr. Hyatt can speak to that.

28 DR. HYATT: I can add to that. The salmon subcommittee
29 will examine this set of revisions having given
30 specific directions to the authors on what the
31 revisions -- the criterion they must satisfy. And
32 as long as the subcommittee group who look at this
33 is satisfied those criterion have been met, that
34 the directions have been followed, then the paper
35 will be accepted and it will be final and
36 published and then posted for -- to be publicly
37 available.

38 Q Dr. Holt, are you expecting there to be some
39 significant changes to some of the commentary --
40 some of the findings and some of the commentary in
41 here?

42 DR. HOLT: I'm not sure how the -- the red, amber,
43 green splits are going to end up with the final
44 version. Our intention from the methodology
45 perspective, which is what I've been involved
46 with, is to provide a more transparent way of
47 showing the impacts of different assumptions about

1 the biological underpinnings so under different
2 assumptions about density, dependence or different
3 assumptions about time-bearing productivity show
4 -- our intention is to show the status associated
5 with each of those different assumptions. That's
6 the major -- that's one of the major revisions --
7 the major revisions that I am most involved with.

8 Q All right.

9 DR. HOLT: And so -- and I can't speak to what the
10 impacts will be on the red, amber, green split
11 amongst the CU's.

12 Q And what about the -- some of the findings in the
13 text? Are you expecting those to change as well?

14 DR. HOLT: I -- I'm not -- I can't speak to that. They
15 could change. Yes, they could change.

16 Q Now --

17 DR. HOLT: And part of the -- one of the -- the
18 comments from the salmon subcommittee was that
19 given that we need to change these analyses, that
20 they could not approve the -- they cannot review
21 and improve the assessments that we provided. And
22 so they provided advice for changing the
23 methodology, which we do, and then have a
24 subsequent review of those assessments once it was
25 clear what the red, amber, green splits would be
26 amongst CU's and amongst assumptions and metrics.
27 We could have a review of that assessment in a
28 subsequent process.

29 Q Okay. So it's very much a work in progress. Is
30 that -- would that be a way to summarize it?

31 DR. HOLT: Well, this -- this paper will be revised by
32 the middle of February, a 90-day limit.

33 Q Okay. Now --

34 DR. HOLT: And so that's -- like that's a -- that's a
35 firm deadline.

36 Q Now, what I understand you did was look up four
37 sets of data for each of the conservation units
38 and run computer simulation programs for each of
39 those metrics or sets of data.

40 A No.

41 Q Okay. Well, maybe you should assume for the
42 moment that I'm a very dim undergraduate in a
43 first-year course and just tell me in one
44 paragraph what you did to -- or two paragraphs,
45 tell me what you did when you were looking at each
46 of the conservation units.

47 DR. HOLT: So we looked at metrics on abundances and

1 trends and abundance over time, which I think is
2 clear --
3 Q Yes.
4 DR. HOLT: -- those two dimensions, right. On trends
5 and abundance over time we looked at two -- two
6 specific metrics. One was short-term reduction so
7 over the last three generations what the
8 reductions have been over time for the short-term.
9 And another one was -- have long-term changes. So
10 what's the current status versus long-term mean?
11 So that was getting at two time scales of change
12 over time.
13 Q And what are those time scales?
14 DR. HOLT: So --
15 Q Did they vary from CU to CU?
16 DR. HOLT: The short time -- the metric on short time
17 scale did not vary year-to-year -- CU-to-CU. That
18 was three generations. So it's approximately 12
19 years for sockeye salmon.
20 Q Okay. And on the long term, it depended on the
21 availability of the data?
22 DR. HOLT: Yes.
23 Q And I presume you used as much data as there was
24 available?
25 DR. HOLT: Yes.
26 Q And what sort of ranges were there for the data
27 that you had?
28 DR. HOLT: Between -- I think it's 15 or 20 at the
29 shortest to 55 or 60 at the longest.
30 Q And I take it from something you said just before
31 the break that one of your concerns is about the
32 consistency --
33 DR. HOLT: Mm-hmm.
34 Q -- and quality of the data.
35 DR. HOLT: Mm-hmm.
36 Q Is that fair?
37 DR. HOLT: Mm-hmm.
38 Q That there are some rivers and streams that we
39 have very good long-term histories for, correct?
40 DR. HOLT: Yes.
41 Q And some that we have either very short periods or
42 periods of broken data or periods of poor data?
43 DR. HOLT: Yes.
44 Q And all of that affects the quality of the
45 computer simulation runs, I presume?
46 DR. HOLT: Yes, but in this assessment there were no
47 simulation runs. That was from the 2009 paper

1 where I evaluated benchmark. This was just purely
2 an assessment --

3 Q Okay.

4 DR. HOLT: -- so no simulations here.

5 Q So it affects the quality of your assessments?

6 DR. HOLT: Yes.

7 Q Are there particular conservation units that you
8 can tell us about that you're really concerned
9 about the quality of data?

10 DR. HOLT: So there were the 26 CU's that we evaluated
11 with -- on both abundance and trends and abundance
12 over time and then there was those additional ten
13 CU's, which we did not evaluate because of the
14 poor quality data. So it's those ten CU's where I
15 would have special concern over data quality
16 issues.

17 Q Any in the 26 that you have real concerns over
18 data quality?

19 DR. HOLT: There are some where we had to use shorter
20 time series because of inconsistencies of how the
21 data had been treated over the longer time series.
22 For example, some of the CU's maybe have been
23 influenced by enhancement practices. So it wasn't
24 fair to compare enhanced and non-enhanced sections
25 of the time series. So we've had to reduce those.
26 And so for -- for those cases, we do have less --
27 poorer quality information because the data set is
28 shorter.

29 Q And I take it that from going forward you as a
30 scientist may be looking for the work for your --
31 the person who replaces you in 25 or 30 years, you
32 would want that data from this point on to be
33 consistently and properly collected?

34 DR. HOLT: True. But techniques are constantly
35 changing so the key component here is when they do
36 change to have a systematic way of comparing
37 methodologies.

38 Q So you can always compare apples with apples?

39 DR. HOLT: Right.

40 Q And that just is something -- or that is something
41 that simply hasn't been done historically?

42 DR. HOLT: That's true.

43 Q I just have a couple of questions about some
44 particular parts of your report. Page 11, please.
45 And if you can blow up, Mr. Lund, the second
46 paragraph? Here, the report in the second
47 paragraph identifies two different periods of

1 decrease in productivity, one in the '60s and '70s
2 and one in the '80s and '90s. Do you see that?
3 DR. HOLT: Mm-hmm, yes.
4 Q Have you got any explanation for those two
5 different productivity decreases?
6 DR. HOLT: That would be better answered by a biologist
7 in the area or perhaps someone from the panel --
8 Q Well, we want to get you --
9 DR. HOLT: -- but Ms. Grant --
10 Q -- finished today. But your --
11 DR. HOLT: Yeah.
12 Q That's --
13 DR. HOLT: No.
14 Q -- outside your area of expertise --
15 DR. HOLT: That's outside my purview, yes.
16 Q -- to explain --
17 DR. HOLT: yeah.
18 Q -- that. If we could please go to pages 92 and
19 93? I looked in your report for something that
20 might summarize your findings in something that we
21 can understand, red, amber and green. Do these
22 two pages summarize what you and your co-authors
23 have found?
24 DR. HOLT: It's a summary of part of the analysis.
25 Q Particularly, it's identifying which of these CU's
26 are in the different colour categories.
27 DR. HOLT: Yes, for individual metrics and for
28 different assumptions about the analyses.
29 Q The -- your evidence now is that these colour-
30 codings may well change?
31 DR. HOLT: Mm-hmm. Yes, and we will be adding more
32 columns especially to the last group, abundance
33 metric one, that last group of columns -- or we'll
34 be adding more columns there to address different
35 -- additional assumptions.
36 Q Again, looking at the dimwitted first-year
37 undergraduate, can you tell us the difference
38 between Ricker, Kalman and Larkin?
39 DR. HOLT: Sure. So Ricker, Dr. Hyatt already spoke
40 about this, is a traditional analysis model for
41 relating the number of spawners to the subsequent
42 number of recruits for the next generation.
43 The Larkin model is an adaptation of that, a
44 revision of that that accounts for the cyclic
45 dynamics and the interactions among cycle lines,
46 that the abundance of fish that -- that come back
47 depend not only on their parents but also the year

1 before their parents or year after and because of
2 density-dependent interactions between cycle
3 lines. So cycle lines are not independent. And
4 so that Larkin model accounts for that -- that
5 cyclic pattern in the interactions.

6 Now, the Kalman -- Kalman model is another
7 revision of the -- of the Ricker model. That's
8 the standard one -- standard model. But it
9 accounts for time-varying productivity. So it
10 accounts for the fact that we've seen declines in
11 productivity over time.

12 What we haven't included in this -- and this
13 -- in those three models is a Larkin version of
14 the model that also considers the time-varying
15 productivity. So that's one -- one assumption
16 that we didn't address that it's missing from
17 here.

18 Q Are they all equally valid or is one --

19 DR. HOLT: Yeah.

20 Q -- a better model or test than the other?

21 DR. HOLT: That was -- a large time was spent
22 discussing that point at the workshop -- at,
23 sorry, the CSAS review in November. How do you
24 weight those? And the overall consensus was that
25 we can't provide more weight to one or the other
26 right now, that we can present them all to show
27 the spread of the status assessment across those
28 different assumptions.

29 Q I don't know if you're able to answer this
30 question but it would appear that the early Stuart
31 and early summers are the runs that generally
32 showed some decline in the '60s and '70s. And the
33 summers, in particular, were the ones that showed
34 the declines in the '80s and '90s. Are you able
35 to say that -- to confirm that or is that -- I'm
36 not going to ask you to go and check that.

37 DR. HOLT: Yeah, I -- I would defer to Ms. Grant for
38 that question.

39 Q And just an obvious point, I think, looking at
40 page 93 is that the trends for the late summer
41 stocks are all very positive with one exception;
42 is that fair?

43 DR. HOLT: Could we scroll down, please?

44 Q Page 93.

45 DR. HOLT: With the exception of Cultus --

46 Q One -- one exception, Cultus Lake. Is that fair?

47 DR. HOLT: And perhaps Seton at least for the recent

1 trends in Seton and in Harrison.

2 Q Yes.

3 DR. HOLT: And perhaps Kamloops.

4 Q And that -- you're aware and maybe you aren't but
5 I'm going to -- are you aware that it is -- that
6 the late summer runs have been closed to fishing
7 for many years to protect that Cultus Lake stock?

8 DR. HOLT: Mm-hmm.

9 Q Is that -- you're aware of that?

10 DR. HOLT: Yes.

11 Q And most of those other runs in that time are
12 quite healthy?

13 DR. HOLT: More than half, say, if that means -- if
14 that's most.

15 Q Now, there --

16 DR. HOLT: On the -- on those metrics.

17 Q There is -- if we can have page 89, please?
18 Second full paragraph. This paragraph makes a
19 report that this -- I'm reading from the second
20 sentence:

21
22 There are seven CU's that were consistently
23 in the status red zone across most, if not
24 all, metrics.

25
26 Is that the kind of comment that might get changed
27 in the next draft?

28 DR. HOLT: Yes, there was some discussion about that
29 because there's disagreement by Ms. Grant's
30 understanding of "most". I'd have to go through
31 and compare what -- which metrics were read and --
32 but -- and -- and it may also change based on our
33 assumptions on the abundance metrics. So I can't
34 guarantee that it will stay the same. That's what
35 I'm -- that's what I want to say.

36 Q And then later on in that paragraph, there's a
37 rather gloomy statement that suggests:

38
39 For the smaller CU's, given their low
40 abundances and decreasing trends, they are at
41 a high risk of extirpation.

42
43 Is that also a comment that is likely to change or
44 may change?

45 DR. HOLT: You know what? After -- when we're reading
46 this, I'm not sure what the context of the word
47 "smaller" is. Let me -- I have to think -- I have

1 to read the entire paragraph to -- is that smaller
2 in abundance? Oh, okay, so historically. So that
3 might not change. I can't guarantee that it won't
4 change but my thinking is that it might not
5 change.

6 Q We just have to wait, I presume.

7 DR. HOLT: Yeah, and I'm also not the first author on
8 this.

9 MR. BUTCHER: Thank you. Those are my questions.

10 MR. WALLACE: Thank you, Mr. Butcher. Ms. Gaertner?

11 MS. GAERTNER: Mr. Commissioner, Brenda Gaertner, and
12 with me, Leah Pence for the First Nations
13 Coalition. I have to ask a few preliminary
14 questions of Dr. Irvine before I turn to Dr. Holt.
15 And I'd like to have called up Exhibit -- where's
16 my notes -- oh, it's not yet marked as an exhibit.
17 It's document number 28 on the Commission
18 counsel's potential list of exhibits, Canada
19 168237. These are minutes of the meeting that was
20 held shortly after the Wild Salmon Policy was
21 passed. It's a meeting that was held at the
22 Musqueam Hall. Chris Corrigan was the
23 facilitator. And by my read of this, Dr. Irvine
24 and Mr. Saunders were both present.
25

26 CROSS-EXAMINATION BY MS. GAERTNER:
27

28 Q Would you agree with me on that? Do you recall
29 that meeting?

30 DR. IRVINE: Yes, I think so.

31 Q And Dr. Irvine, if I could get you to go to page 4
32 to begin with, or if you could direct his
33 attention to page 4 and 5, I think that'll help to
34 refresh your memory. You were there, as I
35 understand it, in a number of capacities but you
36 were talking about Strategy 1 at this stage in the
37 discussion. That's found at the bottom of --

38 DR. IRVINE: What was the --

39 Q Sorry. At the bottom of page 3, you see --

40 DR. IRVINE: Okay.

41 Q -- "Strategy 1: Jim Irvine" --

42 DR. IRVINE: Yeah. And just refresh me, this was
43 December...?

44 Q December 2005 at the Musqueam Hall.

45 DR. IRVINE: Okay.

46 Q Okay?

47 DR. IRVINE: Okay.

1 Q And your presentation begins at the -- at the page
2 4 -- at the top of page 4. And I wonder if you
3 could take a moment and review page 4 and let us
4 know when you need to go over to page 5?

5 MS. GAERTNER: And in between that, I wonder if you
6 could mark this as an exhibit? Or if this could
7 be marked as an exhibit?

8 THE REGISTRAR: Exhibit Number 213.

9 MS. GAERTNER: Thank you.

10

11 EXHIBIT 213: Canada 168237 - Minutes of
12 Meeting held at Musqueam Hall in December
13 2005
14

15 DR. IRVINE: Yes, okay.

16 MS. GAERTNER:

17 Q All right. Now, I wonder if you'll agree with me
18 that there seems to be a couple of themes in your
19 presentation. One is -- and I see it a number of
20 times and I even see it in capitals, which often
21 suggests that you were stressing it, that you were
22 stressing that CU's are not management units and
23 that was likely in result to concerns that First
24 Nations were raising around how they would
25 experience the implementation of CU's in their
26 territories; is that correct?

27 DR. IRVINE: Well, no, not exactly. I mean a lot of
28 people are confused with CU's and they think that
29 their areas of the province so what I would -- the
30 point I was trying to make here is that CU's are
31 groups of salmon, they're not geographic units and
32 they're not -- they're not management units;
33 they're actually groups of fish.

34 Q And so First Nations -- well, I'm going to do it.
35 Do you agree with me that historically DFO and
36 still today make management decisions based on
37 aggregates of sockeye, including things like
38 determining total allowable catch and the effects
39 of which fisheries? You'd agree with me on that?

40 DR. IRVINE: Yeah, I mean historically Fraser sockeye
41 have been managed largely based on the three major
42 run timing groups.

43 Q Exactly. And that's -- similarly, the
44 international obligations that Canada has is
45 linked to those management groupings, also; is
46 that correct?

47 DR. IRVINE: You know, to be honest, I've had very

1 little to do with the Pacific Salmon Treaty so I
2 don't want to --

3 Q All right.

4 DR. IRVINE: -- get into that.

5 Q At page 5 of your minutes, you're confirming to
6 the First Nations that are in attendance at this
7 meeting that in DFO's definition of the
8 conservations they're looking for -- for input; is
9 that correct?

10 DR. IRVINE: Yes, we were trying to figure out ways
11 that we could try to incorporate ATK or TEK.

12 Q And you'll agree with me that your statement
13 reads:

14
15 Infringement of rights will happen during the
16 decision-making process - First Nations need
17 to be engaged in every step of the way. CU
18 is NOT a management unit.

19
20 Is that correct?

21 DR. IRVINE: I just -- I'm just going to try and find
22 that.

23 Q Page 5.

24 DR. IRVINE: I haven't looked at this for over I guess
25 about five years, if I ever looked at it. Yeah,
26 so somebody asked me about whether CU's would
27 infringe on Aboriginal rights and economic
28 opportunities and my answer seems to be that DFO
29 would consult with First Nations and others on the
30 preliminary list of CU's and they were seeking
31 input over the next year.

32 Q In the middle of the page on page 5, answer:

33
34 Definition of CU's - looking for input.
35 Infringement of rights will happen during the
36 decision-making process - First Nations need
37 to be engaged every step of the way. CU is
38 NOT a management unit.

39
40 That's your answer to a question that occurred at
41 that meeting?

42 DR. IRVINE: All right. Just maybe could you highlight
43 the bullet? I'm having trouble sort of figuring
44 out which one you're talking about. Okay. Here
45 we are.

46 Q Halfway through the page.

47 DR. IRVINE: All right. So the question was:

1 CU's will push Aboriginal people out of the
2 fishing industry.

3
4 Infringement of rights will happen during
5 decision-making process.

6
7 That doesn't sound like something I would say. I
8 would -- I would agree with, "First Nations need
9 to be engaged," and "CU is not a management unit,"
10 but I don't -- I certainly don't think I would
11 have said, "Infringement of rights will happen
12 during the decision-making process." I can't -- I
13 can't imagine --

14 Q Mr. Saunders, I wonder if you could help in this
15 matter?

16 MR. SAUNDERS: Yes, I'm -- in addition, my
17 recollection, Mr. Commissioner, isn't that clear
18 on I -- I remember the meeting very clearly, the
19 answers I don't. I think Mr. Corrigan may have
20 been including in the answers some of the dialogue
21 that happened that were raised in the -- at the
22 same time as the answers so I'm not convinced the
23 answers -- and when I was looking at mine as well
24 -- looked like they were a combination of things I
25 said and threads within the -- a dialogue that was
26 happening over the issue.

27 Q Okay. So the dialogue that was happening over the
28 issues was, as we moved into the implementation of
29 the Wild Salmon Policy, one of the first steps
30 that people were looking forward to was the
31 definitions of the conservation units. You'll
32 agree with me on that? And that there was --

33 DR. IRVINE: Yes.

34 Q -- and that there was a need to perhaps educate,
35 understand on all parts as to how those
36 conservation units might be moved into management
37 decisions or otherwise and how conservation units
38 were going to be established. You'll agree with
39 me on that?

40 DR. IRVINE: Yes.

41 Q And you'll agree with me that it was pretty clear
42 at that meeting, and you can take a look at other
43 pages, that First Nations input into the
44 establishment of the conservation units was
45 something not only sought but encouraged by DFO;
46 is that correct?

47 DR. IRVINE: Yes, and I would say that we undertook --

1 we did that during 2006. There was a series --
2 Q Those are the sticky-note meetings? Is that what
3 you're referring to?

4 DR. IRVINE: That's right.

5 Q I wonder if you could make a distinction between
6 seeking engagement at public meetings versus a
7 consultative process with First Nations. So the
8 sticky note meetings you might agree with me that
9 those were meetings in which members of the public
10 and others could come. There were sensitivities.
11 And you asked people to put sticky notes that gave
12 DFO some input. That might be an engagement
13 process; is that correct?

14 DR. IRVINE: Well, I mean some of the meetings -- quite
15 a few of the meetings were specifically with First
16 Nations. It was more than just sticking sticky
17 notes on maps. I mean that was part of it. But
18 my recollection is that we also invited input
19 through -- by telephone and by letters and by
20 email. So it was -- it was more than just stick
21 notes.

22 Q Right. I also want to just point out at the
23 minutes and see whether or not you can confirm
24 whether these were your statements or whether you
25 recall them being made. But I think it's
26 important that at the meeting -- and you'll see at
27 page 6 at the top, third paragraph:

28
29 Benchmarks are measures of status - rather
30 than decision-making points. Two most
31 important things you have to know how many
32 there are (abundance) and how they are
33 distributed.

34
35 You will agree with me on that?

36 DR. IRVINE: Yeah, I wouldn't have said that -- well, I
37 would have said something like, "Benchmarks would
38 delineate status zones and that they're not
39 decision-making points." And in the policy we
40 talked that the two main sources of information
41 would be abundance and distribution. That's
42 correct.

43 Q All right. I understand I have to move to Dr.
44 Holt right now. I did want to establish a few
45 more foundational things because Ms. -- Dr. Holt
46 began her work and so I'll try to do that without
47 taking you to documents and then I'll take you

1 back to the documents tomorrow when I have a bit
2 more time. After the meetings in the communities
3 and the input and getting some of the concerns --
4 I'm going to call them the sticky note meetings
5 just so you can bear with me for a moment. Then
6 there's another meeting in March of 2008.

7 And Dr. Holt, I believe you were present at
8 that March 2008 meeting and, similarly, also, I
9 believe Dr. Hyatt and Mr. Saunders was also there.
10 And I want to take you to Exhibit 193, if I may?
11 So we've done a bit of a fast-forward. We've gone
12 a couple years forward. There's been a couple of
13 forums, as best I recall. And this -- this is the
14 second of the large forums on conservation units.
15 And I want to take you to page 4 and 5. And just
16 to confirm that you were there and that there was
17 a presentation on Strategy 1 and some of the work
18 that was being done on the CU's and the CU
19 methods. You see that?

20 And then I want to take you to Appendix 4 at
21 page -- at page 16 and 17. Sorry. Actually,
22 could you help me and confirm when you agree with
23 to say actually yes. There was a couple nods and
24 I just keep going but I understand that won't be
25 that useful in the transcripts.

26 DR. HOLT: Yes, I was there.

27 Q Thank you.

28 DR. HYATT: As was I.

29 DR. IRVINE: As was I.

30 MR. SAUNDERS: As was I.

31 MS. STALBERG: As was I.

32 Q Oh, great, it was a good party. All right. Now,
33 we'll go to Appendix 4 and this is the matter of
34 import to the questions I'd like to ask Dr. Holt.
35 You'll see at page 16 and 17, there's some
36 summaries and, in particular, First Nations are
37 making it clear they want smaller venues to
38 discuss CU's and the information regarding how CU
39 designations will affect them and they're asking
40 for clearer information. Will you agree with me
41 on that?

42 MR. LUND: I'm sorry?

43 MS. GAERTNER: Sorry. I'm at Appendix 4 at page 16 or
44 17 of that document.

45 MR. LUND: So page 16 is Appendix 2 and Appendix 4 is
46 at page 31. I just want to be sure.

47 MS. GAERTNER: Sorry. Okay. Appendix 2.

1 MR. LUND: Okay.

2 MS. GAERTNER: Sorry. Page 16. I had half of it
3 correct.

4 Q And at number one -- after the -- there's was two
5 points made by the -- under the Skeena Fisheries
6 Commission and then there's the next full
7 paragraph. If you could just review that and see
8 whether you'll confirm that concerns were raised
9 and the request for smaller venues. And I think
10 when they say "CU's" they are in the full thing.
11 That took me a while but I think that is actually
12 conservation units as opposed -- as distinct from
13 anything else there. The proofing of minutes is
14 not always on the highest priority. And then
15 you'll go on to see that they're asking for
16 technical support and they're suggesting some
17 partnerships might be useful for the development
18 of benchmarks and monitoring. Will you agree with
19 me that those were discussed at that meeting and
20 that the minutes reflect that?

21 DR. HOLT: Yes.

22 Q And then you'll go on to see that they're asking
23 for technical support and they're suggesting some
24 partnerships might be useful for the development
25 of benchmarks and monitoring. Will you agree with
26 me that those were discussed at that meeting and
27 that the minutes reflect that?

28 DR. HOLT: Yes.

29 MR. SAUNDERS: I can add. It may be a small point but
30 I'm -- there were breakout sessions, I believe, at
31 this so I don't know necessarily this was plenary.
32 I don't have enough context to know if it's
33 plenary or something that came up in a breakout
34 session.

35 DR. HOLT: My memory is that these were written on
36 pieces of paper.

37 DR. IRVINE: Sticky notes?

38 DR. HOLT: No. No, correct me if I'm wrong here but I
39 think individual participants wrote these on
40 pieces of paper and they may or may not have been
41 voiced out loud.

42 DR. HYATT: My recollection is that is the case, that
43 there were -- there was an opportunity -- in some
44 of these forums, particularly with First Nations
45 people, there's a reticence to -- among many to
46 stand and speak. And so the opportunity was
47 provided to just write a written -- you know, on a

1 -- on a small piece of paper to submit a written
2 commentary so there are collections of
3 commentaries that the facilitator would have
4 incorporated into the record. And if some of
5 these statements appear perhaps somewhat novel to
6 us it may be because we've only either -- this
7 might have been the first time we've seen some of
8 them, or, alternately, because the point wasn't
9 made in sort of the plenary part of the discussion
10 it isn't as firmly imbedded in our minds as it
11 might be.

12 Q Okay. I'm going to need to ask a few questions of
13 Mr. Saunders then. Mr. Saunders, you will agree
14 with me that First Nations were -- were quite
15 interested in ensuring in the establishment of a
16 conservation units the distribution was something
17 that they would be interested in and would want
18 involvement in; is that correct?

19 MR. SAUNDERS: I think that's true, yes.

20 Q And that partly is because the -- how a CU is
21 assessed, as it relates to distribution and what
22 import that has and what decisions may actually
23 eventually once management decisions are made on
24 it could, from their perspective, they raise that
25 with you, affect their abilities to fish in their
26 communities; is that correct?

27 MR. SAUNDERS: I think the -- when -- Dr. Irvine spoke
28 to this earlier. I think there was a lot of -- a
29 strong concern among First Nations that we were
30 going to manage to conservation units would not be
31 putting any emphasis in our management plans on
32 the component populations within a CU. And that
33 was a pause for concern of real import for First
34 Nations.

35 Q Thank you, Mr. Saunders. All right. Let's see if
36 I can now try to direct the questions
37 specifically. I think, Dr. Irvine, I think you'll
38 be part of some of the questions that I have of
39 Dr. Holt and so, as between the two of you, please
40 just decide who is best to answer them. It's my
41 knowledge that there has actually been no feed --
42 no direct consultation with First Nations
43 regarding the setting of the actual list of CU's;
44 is that correct? That that was a peer review of
45 the methodology but the setting of the original
46 CU's for Fraser River sockeye was not brought back
47 into the tribes or the communities for

1 consultation; is that correct?

2 DR. IRVINE: Well, at the sticky-note meetings, there
3 were lists of CU's, including Fraser sockeye,
4 preliminary lists that were presented to the
5 participants so that there was some opportunity at
6 those meetings to have input.

7 Q Yeah, so before the list was obtained, you
8 obtained -- before the list was completed, you got
9 some feedback at some communities but the actual
10 determination of the methodology and the list
11 itself once it moved into final form has not been
12 discussed or -- there has not been a consultative
13 process regarding that; is that correct?

14 DR. IRVINE: Well, as you know better than -- than we
15 do, consultative process -- I mean consultation
16 means -- it has a significant meaning in First
17 Nations but there certainly wasn't I think what
18 you would call Nation-to-Nation dialogue about
19 these -- about these issues.

20 Q And Dr. Holt, you haven't been involved in a
21 consultative process with First Nations regarding
22 their final list of CU's that was developed, have
23 you?

24 DR. HOLT: No, I haven't.

25 Q And to my understanding, there's been no
26 consultations to date with First Nations regarding
27 the benchmarks and the preliminary benchmarks that
28 would be used including the decision to move from
29 just the four potential benchmarks or the three
30 potential benchmarks to the two, including,
31 particularly, the decision not to use distribution
32 as a benchmark. Would you agree with me in that?

33 DR. HOLT: True. There was no formal -- formal process
34 there. There was -- we invited input from First
35 Nations groups in the development of the
36 benchmarks, that CSAP paper, as well as a recent
37 workshop. But it wasn't a formal process that I
38 think that you're asking about.

39 Q Thank you. Dr. Holt, I understand this morning
40 that you mentioned there was consultation on the
41 benchmark methodology and, in particular, in
42 January of '09 in the CSAS process and that First
43 Nations participated in that. I'd like you -- I
44 wonder if you could go to Exhibit 160. I'm sorry.
45 It wasn't on my earlier list but it's now an
46 exhibit so I think it should be not too bad. If
47 you could go to Appendix 2 at page 17 and -- oh,

1 page 20 of the pdf. And you'll see the list of
2 attendees there. I only see one person there that
3 might -- looks like Michelle Wash was there --
4 Walsh was there from the Shuswap First Nation.
5 DR. HOLT: So my recollection was that there was over a
6 hundred people there, which does not match with
7 this, I don't think, unless there's another -- is
8 -- oh, it continues on -- so that doesn't match my
9 recollection. But I also --
10 Q Dr. Irvine...?
11 DR. HOLT: Dr. Irvine might be able to better --
12 DR. IRVINE: Well, no, I'm just wondering if we have
13 the right report. If you go up to the top, is
14 this the meeting that you were talking about?
15 Q This is the January 2009 meeting in which the
16 methodology --
17 DR. IRVINE: Okay.
18 Q -- of the benchmarks was discussed.
19 DR. HOLT: Yes, that's the correct meeting.
20 Q And there are --
21 DR. HOLT: But --
22 Q -- lists of attendees?
23 DR. HOLT: Yeah, you know, to be honest, my
24 recollection was it was in that massive hall at --
25 down at SFU Harbour Centre. It was a double room.
26 I do remember there being over a hundred people
27 but -- so but that does not mesh with what this
28 attendee list said.
29 Q And so that would have been the only consultation.
30 When you mentioned this morning in your evidence
31 that there was consultations, including First
32 Nations participating at it, it's this meeting
33 that you're talking about?
34 DR. HOLT: Exactly. It's this -- this meeting, right.
35 Q And it's a large meeting with a whole bunch of
36 people, including a lot of technical information
37 from scientists; is that correct?
38 DR. HOLT: Yes, this was meant to be a technical
39 meeting on the scientific underpinnings of the
40 benchmark developments.
41 Q All right. Again, Dr. Holt, you mentioned this
42 morning in your evidence that consultations
43 occurred in June of this year, June 2010, at a
44 workshop on identifying benchmarks and assessing
45 the status of the conservation units. I wonder if
46 you could pull Exhibit 166? And if you could go
47 to page 8. Again, this is a list of participants

1 and it appears that Mike Staley was present. I
2 should mention I think Mike Staley was also
3 present at that earlier meeting, although it's not
4 clear if he's representing anyone. He's there
5 clearly participating in the dialogue for sure.
6 And there's a person from NTC Fisheries and
7 there's a person from Skeena. Is there anybody
8 else that you can identify as First Nations off
9 that list that you know of that would have
10 participated in that dialogue that day?
11 DR. HOLT: No, and I have to mention that this was --
12 meeting was intended to be a workshop for
13 discussing the challenges -- the general
14 challenges for -- for applying Strategy 1.2 or
15 implementing Strategy 1.2 and wasn't specifically
16 focused at First Nations involvement --
17 Q Thank you.
18 DR. HOLT: -- as I think you're getting at.
19 Q Thank you. And so if -- if I got it right, given
20 where we are right now, we moved from meetings in
21 which there was input into the preliminary list of
22 the possible conservation units and those were
23 regional in nature. And there hasn't been any
24 further regional meetings in nature at all and we
25 are now setting conservation units and their
26 benchmarks without such good dialogue; is that
27 correct?
28 DR. HOLT: Yes.
29 Q Mr. Saunders, is that -- does that surprise you
30 given the effort that was made at the time in
31 which the Wild Salmon Policy was passed and the
32 discussions that occurred later?
33 MR. SAUNDERS: I don't know if -- I think there's a --
34 I'm not clear on the sort of -- I'm feeling
35 uncomfortable having been away -- back in the last
36 year-and-a-half but having been -- been away. I
37 -- I would feel a little more comfortable if I saw
38 a timeline of various meetings. And I think --
39 Q Mr. Saunders, why don't you wait till tomorrow
40 then because I was going to do that but since I
41 had to focus only on the issues around Strategy 1,
42 I've just done that.
43 MR. SAUNDERS: Okay.
44 Q So I'll ask you that question tomorrow, in all
45 fairness. Dr. Holt, you mentioned earlier today
46 and I took great interest in one of the
47 recommendations that you thought would be useful,

1 which is partnerships in the assessment and the
2 application of the conservation units. And in
3 particular, I'm wondering if one of the things
4 you're including in that discussion is whether or
5 not partnerships with First Nations who have, I
6 would -- I would suggest, useful information on
7 the ground regarding ecosystems. Is that
8 something you're considering when looking at the
9 assessments of conservation units?

10 DR. HOLT: You mentioned ecosystems in your question
11 there and so I would defer the ecosystem level
12 assessments to Strategy 3 and Kim -- Dr. Hyatt.

13 Q Let's leave it to conservation units.

14 DR. HOLT: But for -- to the extent that First Nations
15 have information on assessments of population
16 status of conservation units then, yes, I would
17 see that as -- as valuable.

18 Q And would you agree with me that the diversity of
19 the stocks and the diversity of the First Nations
20 on the -- within the Fraser River Watershed is
21 perhaps one of the reasons why that hasn't been
22 done?

23 DR. HOLT: No, I'm not quite sure where that question
24 is -- I don't think that diversity is a limiting
25 factor in bringing in that level of input.
26 Perhaps you can explain that a bit further.

27 Q I'm actually -- sure. I'm making the suggestion
28 and I just wonder if you'll agree with me, that if
29 you have to engage and consult with 20 or 30 or 40
30 tribes or -- depending on how large a migratory
31 route you're going to talk about, including many,
32 many smaller communities that might have specific
33 issues around distribution, that that might be a
34 little bit more challenging than the Barclay
35 pilot; is that correct?

36 DR. HOLT: True. I understand what you're saying now.
37 The diversity of the First Nations groups within
38 the Fraser River Watershed because what we need
39 and we don't have is someone to spearhead that --
40 that process.

41 Q And so I'm very concerned that this paper was
42 presented in -- just last month and you're -- now
43 got 60 or 90 days to complete it and the
44 benchmarks will be set, is that correct, as a
45 result of that?

46 DR. HOLT: No, I wouldn't say that's fair. I think
47 there's a misconception that benchmarks are

1 decided once and -- and then they're set in stone.
2 Benchmarks will change annually, as new
3 information becomes available. In terms of --
4 there are specific values on specific metric and
5 then as more information becomes available on
6 other metrics, as we, for example, gather
7 information from groups, for example, from First
8 Nations on distribution, then we will incorporate
9 that information to develop new benchmarks on
10 those metrics. So there -- I -- there is no final
11 benchmarks that are set with this paper. They
12 will evolve.

13 Q All right. I'm just wondering if -- were you
14 familiar with the process that was used in the
15 Skeena, as it relates to the setting of the
16 benchmarks? It was my understanding there was
17 ground-truthing with First Nations that occurred
18 before the benchmarks were finalized. Are you
19 aware of that?

20 DR. HOLT: No, and I'm unfamiliar with the benchmarks
21 that have been finalized in the Skeena as well.

22 Q Well, maybe I should -- I wonder if anybody else
23 -- Dr. Hyatt might be able -- any of the other
24 panel might be able to correct. No? All right.
25 Let's leave it.

26 MR. SAUNDERS: I wasn't aware of that.

27 Q My understanding was that Blair Holtby actually
28 did the work with the tribes in the Skeena to do
29 some ground-truthing before the -- maybe it was
30 before the conservation units were set, as
31 distinct from before the -- but you're not aware
32 of that and we can leave it.

33 MR. SAUNDERS: I'm not aware of that work, no.

34 Q Okay. Dr. Holt, we're going to develop this a
35 little bit tomorrow but perhaps I think what I'll
36 benefit from your insight about what the
37 challenges are associated when you take a
38 scientific method, which you'd -- I'm going to be
39 very careful -- and I mean by no insult to this
40 panel -- you dissect and ecosystem into individual
41 parts and you get it right down to a conservation
42 unit and the challenge of moving that to a world
43 view of a First Nations where the ecosystem is
44 felt and experienced as a whole and that
45 dissecting is often felt dangerous. And in
46 particular, that lots of their information,
47 sometimes called traditional ecological knowledge,

1 is -- is what I see in your written materials
2 often considered anecdotal. And so I would like
3 to know what your suggestions are or your ideas
4 are -- and I will explore this with the panel more
5 tomorrow -- on some of the challenges and some of
6 the ways forward in trying to integrate the
7 science of these two different world views in a
8 way that I think could be very useful and, to use
9 a word of the panel members earlier, elegant. And
10 so I'd like to know what your suggestions or ideas
11 on that are.

12 DR. HOLT: One of the challenges with the Strategy 1 is
13 combining information from multiple metrics that
14 come up with a single story on the assessment,
15 red, amber, green. We found that that's difficult
16 because we lose information. We have a lot of
17 information on different metrics and different
18 indicators, and we feel that that broad
19 information may be relevant for the overall story
20 of a CU. So there may be information -- broader
21 information from First Nations, traditional
22 ecological knowledge, that could contribute to
23 that story. That's -- and that's part of the
24 resistance among some scientists to creating that
25 overall assessment because we lose that
26 information that is sometimes less quantifiable.
27 That -- but it's part of that more holistic view
28 of the entire system. So I could see information
29 from traditional ecological knowledge contributing
30 to that overall story, if not to individual
31 technical metrics. And I think that's one
32 advantage to not reducing our information across
33 all these different metrics and assumptions into a
34 single red, amber, green but -- but providing that
35 entire story.

36 Q And have you given some thought as to the types of
37 processes that would be useful to implement that
38 as you consider implementing Strategy 1?

39 DR. HOLT: I haven't myself thought about that. I do
40 see that as important but that just hasn't been on
41 my workload myself so someone else might be able
42 to speak to that.

43 Q We'll get into traditional ecological knowledge
44 tomorrow. I was just curious given the import of
45 your work in this area, whether or not you've
46 begun to think about it and how you'd like to
47 encourage it. Particularly, I'm concerned -- I

1 have concerns and my clients have raised concerns
2 about how scientific data and the use of technical
3 data seems to override traditional ecological
4 knowledge and occasions and that there is an
5 emphasis on that.

6 And with all due respect, I think the process
7 that you've now recently been put through to get
8 to these benchmarks is going to cause concerns.
9 And so I'm wondering what care could you take and
10 how you think you could take more care in trying
11 to ensure traditional ecological knowledge and
12 First Nations concerns are brought closer into the
13 scientific processes that you're relying upon.

14 DR. HOLT: So that could involve a more concrete
15 consultative process following some of the
16 recommendations that were in the workshop notes
17 here. Perhaps others on the panel would like to
18 speak to this.

19 Q Mark, do you want to...?

20 MR. SAUNDERS: Well, I -- Mr. Commissioner, I think you
21 were interested in Carries' sort of thinking on
22 this. I don't know if we're going to get it in --
23 into it tomorrow but my -- I've been involved
24 with, as you know, the development of the policy
25 for -- since 2003. And I feel very strongly that
26 one of the most important linkages is to bring
27 western science and the traditional -- Aboriginal
28 traditional knowledge together. I don't pretend
29 to understand, after having talked to a lot of
30 First Nations people, and I find it very difficult
31 as a western scientist to be able to understand
32 exactly what ATK is. I think too many of us have
33 a feeling it's simply an observation that we can
34 very easily incorporate and add it into our
35 scientific evidence and carry on in a traditional
36 hypothesis testing reductionist approach. And so
37 the approach I took five years ago when I was on
38 the implementation team, I was approaching First
39 Nations Aboriginal Fisheries Commission -- or the
40 people within that group -- policy group that had
41 experience with ATK and -- or in the process of it
42 and I said -- and we agreed at that time in our
43 informal discussions that it should come from
44 First Nations and we were working on potentially
45 guidelines to DFO on -- from First Nations to us
46 on how to incorporate ATK into our assessments,
47 into our science. And for various reasons, that

1 didn't come -- that work, as to my knowledge, it
2 didn't come to pass. But I still would hold that
3 that's a type of a dialogue that we would have to
4 establish a process.

5 Q Okay. We will get into that a little bit more.

6 MR. SAUNDERS: Okay.

7 MS. GAERTNER: And I'm going to make sure that Mr.
8 Wallace has time to finish. Those are all my
9 questions of this panel. I'm grateful for your --
10 of Dr. Holt actually. I'll have more questions
11 for the rest of you tomorrow.

12 MR. WALLACE: Thank you.

13 MS. GAERTNER: Thank you.

14 MR. WALLACE: Mr. Commissioner, I have one clarifying
15 question and so I'd like to put it to Dr. Holt.

16

17 RE-EXAMINATION BY MR. WALLACE:

18

19 Q Dr. Holt, you were asked -- or in an answer to a
20 question from Canada's counsel, you observed that
21 priority CU's -- you spoke of priority CU's for
22 the determination of benchmarks. Now, priority
23 CU's has a meaning and in Strategy 4 of the Wild
24 Salmon Policy. And I just wanted to clarify that
25 when you were speaking of priority CU's for the
26 determination of benchmarks that wasn't the -- you
27 weren't speaking of the priority CU's identified
28 under the Wild Salmon Policy, which come in for
29 special treatment on an interim basis but rather,
30 as I understand it, these were just -- these were
31 the CU's that you established benchmarks for
32 first.

33 DR. HOLT: That's true. Those were CU's identified by
34 the Wild Salmon Policy Strategy 1 oversight group
35 to implement Strategy 1.

36 Q And that was simply because there had been a pilot
37 project for one and so on. Was another reason
38 that those were selected because those were the
39 CU's that had been prioritized for action under
40 the Marine Stewardship Council Action Plan?

41 DR. HOLT: It's not clear to me that that was the case
42 and Neil Schubert, Mr. Schubert, was chairing that
43 meeting and would have a better understanding of
44 that unless someone else on the panel --

45 Q They are the same CU's. Do you know that?

46 DR. HOLT: Okay.

47 Q Okay.

1 DR. HOLT: Yes.

2 Q Okay.

3 DR. HOLT: Yes.

4 Q You don't have that, thank you.

5 MR. WALLACE: Mr. Commissioner, I have no further
6 questions. And Mr. Timberg, I understand, had
7 none as well. And Dr. Holt, thank you.

8 THE COMMISSIONER: Yes, thank you, Mr. Wallace. And I
9 am grateful to participant's counsel who
10 cooperated with Commission counsel on ensuring
11 that your questions of Dr. Holt could be answered
12 today, as she is not available tomorrow. We have
13 tomorrow for the rest of the panel and I would
14 again hope that all of you will do as you've been
15 doing along and I'm grateful for that, cooperating
16 with Commission counsel to work out your time
17 allotments so that we can get through the panel
18 tomorrow. And I think we're sitting until 4:30
19 again tomorrow to try and accomplish that.

20 MR. WALLACE: Yes, indeed. We are -- I fully expect to
21 get into the RDG panel tomorrow at noon or
22 thereabouts.

23 THE COMMISSIONER: All right. Well, Ms. Gaertner is
24 shaking her head. But in any event -- but then
25 again, she's frequently shaking her head so it
26 could just mean it's the end of the day. Thank
27 you all very much.

28 THE REGISTRAR: Hearing is now adjourned for the day.

29

30 (PROCEEDINGS ADJOURNED TO DECEMBER 8, 2010 AT
31 10:00 A.M.)

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1 I HEREBY CERTIFY the foregoing to be a
2 true and accurate transcript of the
3 evidence recorded on a sound recording
4 apparatus, transcribed to the best of my
5 skill and ability, and in accordance
6 with applicable standards.
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10 _____
11 Karen Hefferland
12

13 I HEREBY CERTIFY the foregoing to be a
14 true and accurate transcript of the
15 evidence recorded on a sound recording
16 apparatus, transcribed to the best of my
17 skill and ability, and in accordance
18 with applicable standards.
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23 Susan Osborne
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25 I HEREBY CERTIFY the foregoing to be a
26 true and accurate transcript of the
27 evidence recorded on a sound recording
28 apparatus, transcribed to the best of my
29 skill and ability, and in accordance
30 with applicable standards.
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35 Diane Rochfort
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37 I HEREBY CERTIFY the foregoing to be a
38 true and accurate transcript of the
39 evidence recorded on a sound recording
40 apparatus, transcribed to the best of my
41 skill and ability, and in accordance
42 with applicable standards.
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47 Karen Acaster