

# The Timeliness of Scientific Information in Support of Sustainable Management of Canada's Fisheries and Oceans

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## Introduction

Canada's marine fisheries are highly valuable: they are a major driver of our economy, shape our culture and sustain our coastal communities. Yet many of Canada's marine fish and invertebrate stocks are depleted, and just over a quarter can confidently be considered healthy (Oceana Canada 2020). Successful modern fisheries management requires evidence-based decision making, supported by strong science (Melnychuk 2017).

Science and evidence-based decision making have become increasingly important in recent decades in Canada (Government of Canada 2000, CSTA 1999), including in support of the management of our fisheries and oceans (DFO 2018a). The Canadian Science Advisory Secretariat (CSAS), within Fisheries and Oceans Canada (DFO), oversees the peer-review process of science related to the management of Canada's fisheries and oceans (DFO 2020a). The process is intended to provide the best-possible science advice to the Minister of DFO, managers, rights-holders, stakeholders and the public through rigorous peer review that is evidence-based, objective, impartial and respectful (CSAS 2011). The CSAS process is unique within the Canadian government, with no other federal departments using peer-review evaluations with invited external participation to develop science advice (DFO 2019). Peer review is considered a best practice for providing science advice for fisheries management, and similar processes are used in the United States (by the National Oceanic and Atmospheric Administration) and Europe (by the International Council for the Exploration of the Sea) (DFO 2019).

It is important that the management of our fisheries and oceans is transparent and that the results and advice generated from CSAS peer reviews are available to the public as soon as possible. CSAS is required to follow the Science Advice for Government Effectiveness (SAGE) principles (CSTA 1999, DFO 2019), which include a principle on openness and transparency, stating "*The government is expected to employ decision-making processes that are open as well as transparent to stakeholders and the public, and that the public has access to the findings and advice of scientists as early as possible.*" Documents produced from the science peer-review meetings need to be published in a timely manner. Failure to do so can lead to delays in management decisions and perceptions that advice is being withheld or unduly influenced by lobbyists, tainting the credibility of the process (CSAS 2012). When science information is produced in a timely fashion to support decision making and made publicly available so that the basis of decisions is transparent, Canadians can have increased confidence in the management of our fisheries and oceans. Only then can decisions be independently evaluated in real time to ensure they promote the stability of healthy fisheries and the rebuilding of depleted stocks for the benefit of marine ecosystems, coastal communities and the fishing industry.

Oceana Canada has evaluated the timeliness of the availability of scientific information to support the management of Canada's fisheries and oceans from CSAS meetings held in 2017 (Oceana Canada 2018) and 2018 (Oceana Canada 2019). The results were startling: in each year only about 10 per cent of expected publications from CSAS meetings were published within CSAS policy timelines, a third or more were published late, and about half of the expected documents were not available.<sup>1</sup> DFO initiated an internal evaluation of the CSAS process between March 2018 and January 2019 (DFO 2019). Generally, it found that CSAS is valued and well respected, but DFO identified several opportunities to improve the science advisory process, including the timeliness of the availability of science advice. To determine if improvements have been made, this current Oceana Canada report

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<sup>1</sup> As of July 1<sup>st</sup> of the following year.

evaluates the timeliness of the availability of scientific information from CSAS meetings held in 2019 and discusses changes made since the DFO released the findings and recommendations from its internal evaluation.

## Background

Requests for advice to CSAS are reviewed, assessed and prioritized based on risks, and the schedule is finalized prior to the start of the new fiscal year so scientists and managers can develop work plans and make necessary resource allocations (CSAS 2012). Participants are chosen by CSAS for their knowledge of the topic under review (e.g., species, modelling) (CSAS 2011), and meeting conclusions and final scientific advice are reached by consensus (CSAS 2010a). Documents produced from the science peer-review meetings need to be published in a timely manner (CSAS 2012).

The CSAS currently produces four types of publications resulting from its meetings (CSAS 2010b):

1. Science Advisory Reports: These outline the peer-reviewed scientific advice that was developed through the consensus of meeting participants. These documents contain a synopsis of the evidence in support of the advice but usually lack specific details on the scientific analysis. As per policy guidelines, they should be published within approximately 10 weeks of the end of the meeting (CSAS 2012).
2. Research Documents: These outline in detail the scientific studies and analyses that were peer reviewed during the meeting and are based on working papers that are produced before the meeting. These documents contain all the detail required for other scientists to review, critique or replicate the research. As per policy guidelines, they should be published less than five months from the end of the meeting (CSAS 2012).
3. Proceedings: These outline the discussions that occur during a peer-review meeting and list who participated and their affiliations. These documents contain the relevant details of any concerns expressed by participants about methodology, as well as alternate interpretations of the scientific analysis or resultant advice. As per policy guidelines, they should be published less than five months from the end of the meeting (CSAS 2012).
4. Science Responses: These outline the scientific advice and proceedings from meetings convened to address urgent and unforeseen reviews undertaken under the Science Response Process (SRP). SRPs are less thorough review processes (i.e., internal peer review; usually no external reviewers) held in response to urgent and unforeseen issues or where a fully inclusive and thorough science peer-review meeting is not required because such a meeting has already developed a framework for the issue (CSAS 2020). These documents contain a synopsis of the evidence in support of the advice but lack specific details on the scientific analysis. As per policy guidelines, they should be published within approximately 10 weeks of the end of the meeting (CSAS 2012).

Multiple publications are often expected from each meeting. There are no requirements on which types need to be published, but given their differing, yet complementary, content, peer-review meetings should always require the publication of a Science Advisory Report, Research Document and Proceedings. SRPs, which are often urgent and have less thorough review processes, should result in the publication of a Science Response, and it is only in rare circumstances that a report would not be required (CSAS 2020).<sup>2</sup>

Generally, there are two steps in the publication process: 1) submission of draft reports to CSAS by authors and 2) formatting of reports and publication by CSAS. Following meetings, the meeting chair is responsible for ensuring

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<sup>2</sup> CSAS policy indicates that "The outputs of SRPs will generally be documented via the 'Science Response series' in order to have a consistent way to document the results. However, there may be particular cases where it is considered not relevant to document the results of a process using one synthesis report (e.g. gathering comments from various sources on a draft of a COSEWIC Status Report). In such cases, no Science Response report may be produced" (CSAS 2020).

Science Advisory Reports (or Science Responses) and Proceedings are finalized, reviewed and/or approved by participants before submitting the documents to the appropriate regional CSAS office or the CSAS Secretariat (DFO 2019). The science lead is responsible for ensuring that Research Documents are finalized with any updates discussed during the peer review and submitted to the appropriate regional CSAS office for publication. Once documents are received, CSAS staff ensure they are complete, formatted as required and available in both official languages for publication. Regional CSAS offices then submit all documents to the Secretariat for publication. The Secretariat publishes all submitted documents on the CSAS website, ensuring that the science advice is publicly available (DFO 2019).

## Methods

To assess the timeliness of recent scientific information in support of fisheries and oceans management in Canada, Oceana Canada examined all CSAS meetings held in 2019 and evaluated the ensuing publications produced against expected publications and CSAS's publication deadline guidelines (CSAS 2012). The CSAS schedule website, publication search tool and spreadsheet export tool (DFO 2018b, 2020b) were used to determine how many processes resulted in the publishing of all expected publications within expected timelines, how many resulted in publications published late and how many still had publications forthcoming as of July 1, 2020.<sup>3</sup> To determine the focus of meetings, broad taxon (e.g., invertebrate, groundfish) and subject area category (e.g., population assessment, habitat and biodiversity) were assigned to each meeting.

The CSAS schedule and corresponding exported spreadsheet list expected publications for each CSAS meeting. These were used to assess if all expected publications were published. The CSAS schedule website is updated with links to publications when they become available. In this analysis, if unexpected publications were published, they were assumed to have been expected, even if they were not listed as expected on the CSAS schedule website or exported spreadsheet (as they are often removed from the expected list once published). For meetings held in 2019, the list of expected publications included at least one document for all processes that still had not produced publications. As in past assessments, if a meeting was noted as having been postponed, it was excluded from the analysis.

Document publication dates, as they appear in exported spreadsheets from the results of CSAS publication searches, were compared to the CSAS policy on timelines for submission and publication of documents to evaluate the timeliness of publications produced (CSAS 2012). This policy is still available on the internet,<sup>4</sup> but it can no longer be found by navigating the CSAS website, and it is not listed in the list of policies on the website.<sup>5</sup> Thus, it is unclear if DFO is still intending to adhere to it. The internal DFO evaluation of CSAS recommended revisiting and extending publication timelines but also reiterated the importance of the best practice of ensuring documents are publicly available in a timely manner (DFO 2019). Given there are no new policies on publication timeliness yet available on the CSAS website, and to enable comparisons to past assessments (Oceana Canada 2018, 2019), the details of the existing CSAS policy on timelines for submission and publication of documents (CSAS 2012) are used for this assessment to evaluate the timeliness of publications produced.

The policy outlines the timelines for submission of documents to CSAS by report authors after processes have been completed (CSAS 2012). It also outlines timelines for CSAS to finalize, format, translate and post documents online once received (CSAS 2012). However, because only meeting end dates and document publication dates are publicly available, intermediary deadlines for submitting, finalizing, formatting and translating documents are not considered in this assessment.

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<sup>3</sup> July 1<sup>st</sup>, 2020 is more than one month after the longest deadline for publication under CSAS policy for meetings held in late December 2019.

<sup>4</sup> <http://www.dfo-mpo.gc.ca/csas-sccs/process-processus/timelines-delaies-eng.html>

<sup>5</sup> <https://www.dfo-mpo.gc.ca/csas-sccs/process-processus/index-eng.html>

The policy indicates that Research Documents and Proceedings should be submitted to CSAS as soon as possible and at the latest within four months of the end of the meeting. These document types should be posted as soon as possible and at the latest within three weeks of reception of the final documents by CSAS. Therefore, these document types were evaluated as being published on time when they were published within 145 days<sup>6</sup> of the meeting end date. Meanwhile, the policy indicates that Science Advisory Reports and Science Response reports should be submitted to CSAS as soon as possible and at the latest within eight weeks of the end of the meeting. These document types should be posted as soon as possible and at the latest within two weeks (10 business days) of reception of the final document by CSAS. Therefore, these document types were evaluated as being published on time when they were published within 70<sup>7</sup> days of the meeting end date.

**Results**

In 2019, the number and types of meetings were similar to those in 2017 and 2018 (Figure 1). In 2019, 119 CSAS meetings were held, 71.4 per cent of which were external-peer-review processes (85 meetings), a slight increase compared to the previous two years. The rest were SRPs (34 meetings).

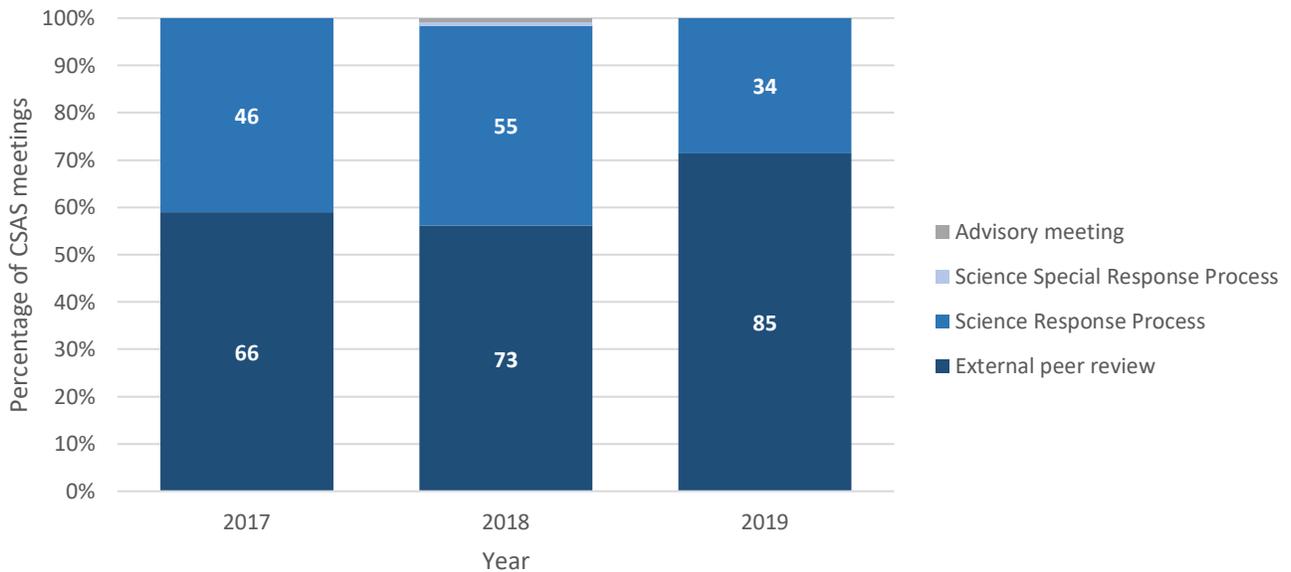


Figure 1. The percentage of Canadian Science Advisory Secretariat (CSAS) meetings held in 2017 (n = 112 meetings), 2018 (n = 130 meetings) and 2019 (n = 119 meetings) belonging to each meeting type. The number of meetings in each category is indicated in white font within the bars. In 2018, there was one Science Special Response Process and one Advisory meeting held by CSAS. Neither of these meeting types were held in 2017 or 2019.

In all years, the subject matter of meetings was also similar (Figure 2). In 2019, the greatest number of meetings once again pertained to population assessments of invertebrates (21.8 per cent or 26 meetings), and there continued to be many meetings pertaining to population assessments of both groundfish (10.9 per cent or 13 meetings) and diadromous fish (10.1 per cent or 12 meetings). But this year the catch-all “other” category, which does not focus on a specific taxa group, was the subject of the second-greatest number of meetings (13.4 per cent or 16 meetings). Many of these meetings pertained to reviewing the environmental impacts of specific human

<sup>6</sup> (4 months x 31 days/month) + (3 weeks x 7 days/week) = 145 days

<sup>7</sup> (8 weeks x 7 days/week) + (2 weeks x 7 days/week) = 70 days

activities, such as a review of the Marine Harvest Atlantic Canada aquaculture siting baseline assessments or science advice for pathways of effects models for marine shipping. There were more of these “other” meeting types in 2019 than in previous years.

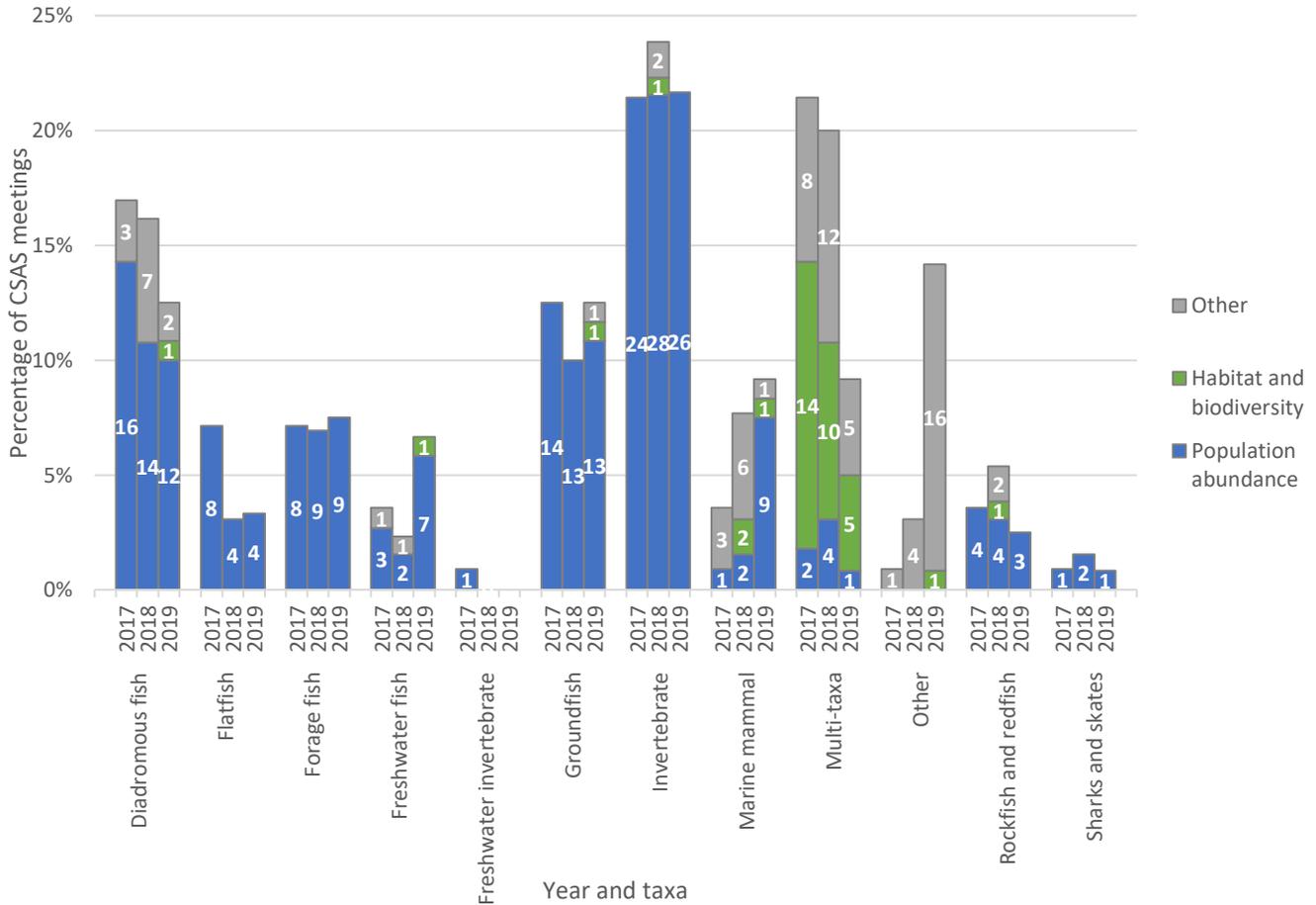
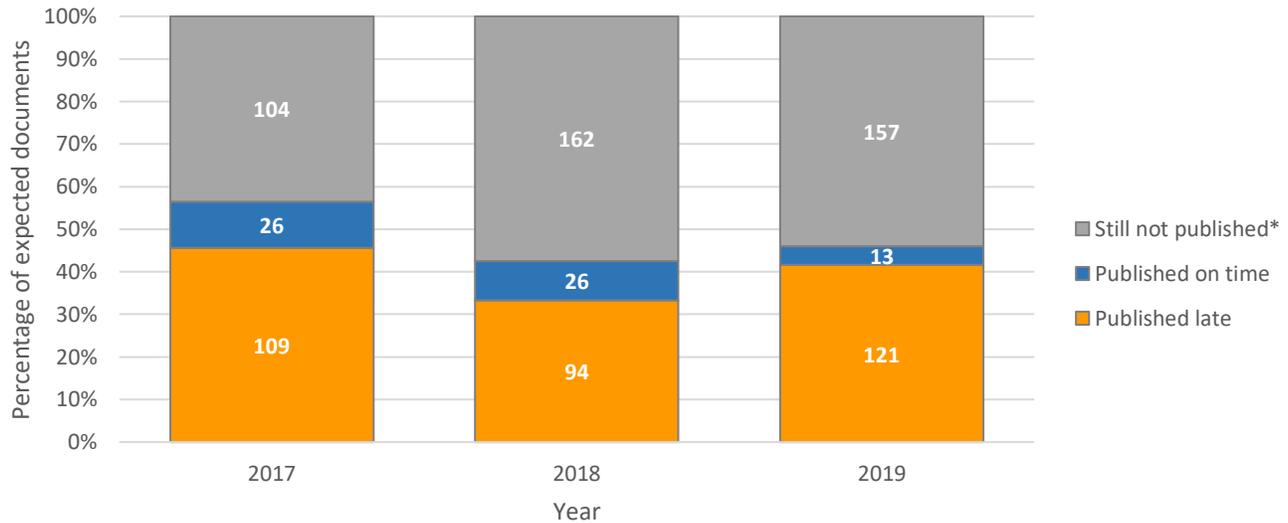


Figure 2. The percentage of Canadian Science Advisory Secretariat (CSAS) meetings held in 2017 (n = 112 meetings), 2018 (n = 130 meetings) and 2019 (n = 119 meetings) that pertained to population abundance, habitat and biodiversity, or other subject matters among different taxonomic groups. The number of meetings in each category is indicated in white font within the bars.

Overall, meetings in 2019 were slated to produce a combined 291 documents, slightly more than what was expected in the previous two years (239 documents for meetings in 2017;<sup>8</sup> 282 documents for meetings in 2018). In 2019, only 4.5 per cent of documents (13 documents) were published within CSAS policy timelines, 41.6 per cent (121 documents) were published late, and 54.0 per cent (157 documents) are not yet available. This represents about a five-percentage-point drop in overall timeliness of document publication as compared to 2017 and 2018 meetings, from which approximately 10 per cent of expected documents were published within CSAS

<sup>8</sup> Last year’s report (Oceana Canada 2019) lists 245 expected documents from meetings held in 2017, while the 2018 report (Oceana Canada 2018) lists 239 expected documents, as is indicated here. This is because in last year’s report, the 2017 dataset was updated, and some additional documents were found to have been published since the previous year that were not previously listed on CSAS’s list of expected documents. To maintain comparability among years, here Oceana Canada presents results of assessments of timeliness for each year of meetings as evaluated on July 1<sup>st</sup> of the following year. This ensures each year of meetings is compared using the same timelines for report publication (i.e., 2017 processes would have had an additional two years over 2019 processes to publish missing reports).

policy timelines (Figure 3). In 2019, as in 2018, over half the expected documents were still not published more than six months after the last meeting of the calendar year.



*Figure 3. The percentage of documents expected to be published as a result of Canadian Science Advisory Secretariat (CSAS) meetings held in 2017 (n = 112 meetings; n = 239 expected documents), 2018 (n = 130 meetings; n = 282 expected documents) and 2019 (n = 119 meetings; n = 291 expected documents) that were published within and outside of CSAS policy timelines, as of July 1 of the following year. The number of documents in each category is indicated in white font within the bars. \*As of July 1 of the following year.*

In 2019, documents that were published late were published on average 133.5 days (minimum one day; maximum 381 days; median 116.5 days) after CSAS’s policy on timelines indicates they should have become available (see Table 1 for a breakdown by document type). For all documents that were published (either late or on time), it took on average 211.6 days after the meeting end date (minimum 29 days; maximum 451 days; median 184 days) until they were publicly available (see Table 2 for a breakdown by document type). Multiple documents are often expected for each meeting, with 2.4 documents expected on average (minimum one; maximum seven; median three) in 2019.

In 2019, as in past years, timeliness varied by document type. Most Science Advisory Reports and Science Responses were published, albeit with the majority late, while Proceedings and Research Documents are still not available from most meetings held in 2019 (Figure 4). In general, publication rates (documents published on time and late combined) were better for each document type in 2017 when compared to 2018 and 2019 (Figure 4).

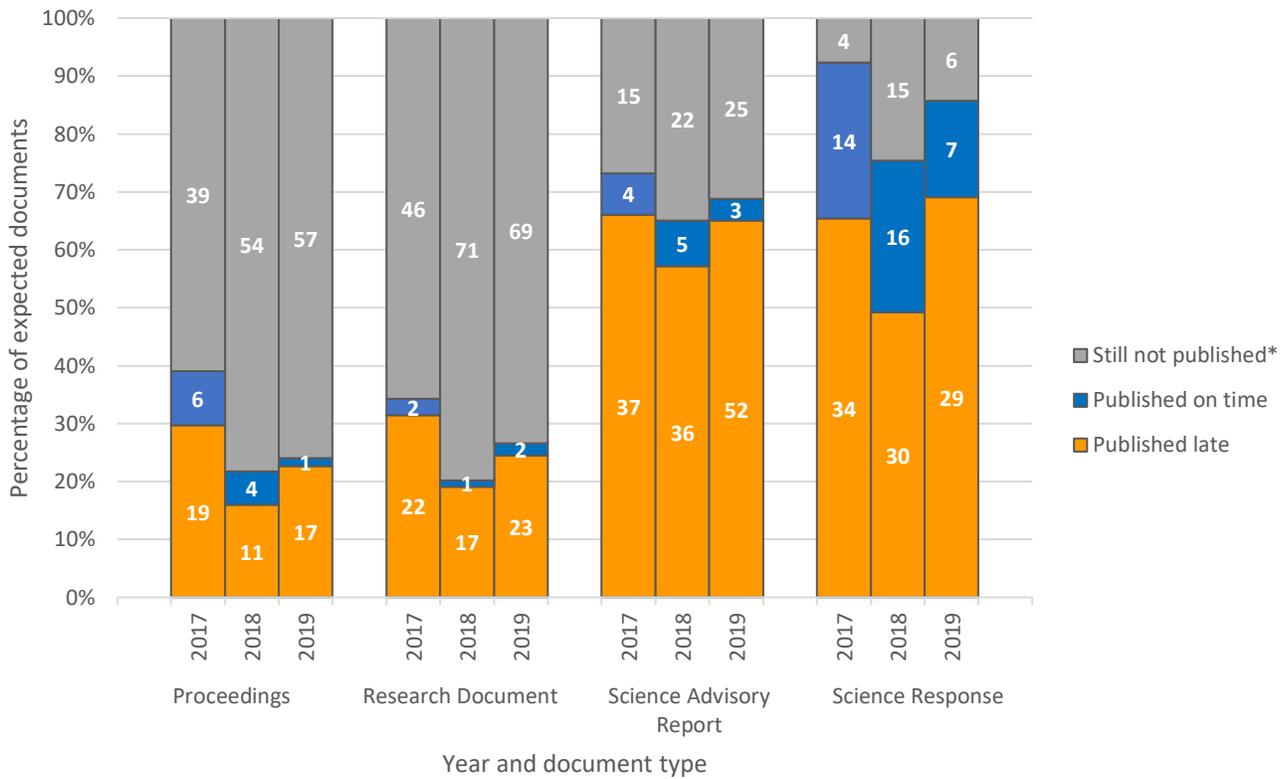


Figure 4. The percentage of documents for each of the four document types expected to be published as a result of Canadian Science Advisory Secretariat (CSAS) meetings held in each year that were published within and outside of CSAS policy timelines, as of July 1 of the following year. The number of documents in 2017 (n = 112 meetings; n = 239 expected documents), 2018 (n = 130 meetings; n = 282 expected documents) and 2019 (n = 119 meetings; n = 291 expected documents) in each category is indicated in white font within the bars. \*As of July 1 of the following year.

In 2019, only 5.9 per cent of all meetings (seven meetings) had all their documents published within CSAS policy timelines, 61.3 per cent (73 meetings) had at least one document published late, and 31.9 per cent (38 meetings) still do not have any documents available. These results are similar to those of the last two years, albeit with a reduction in the number and percentage of meetings from which all expected documents were published within CSAS policy timelines (Figure 5).

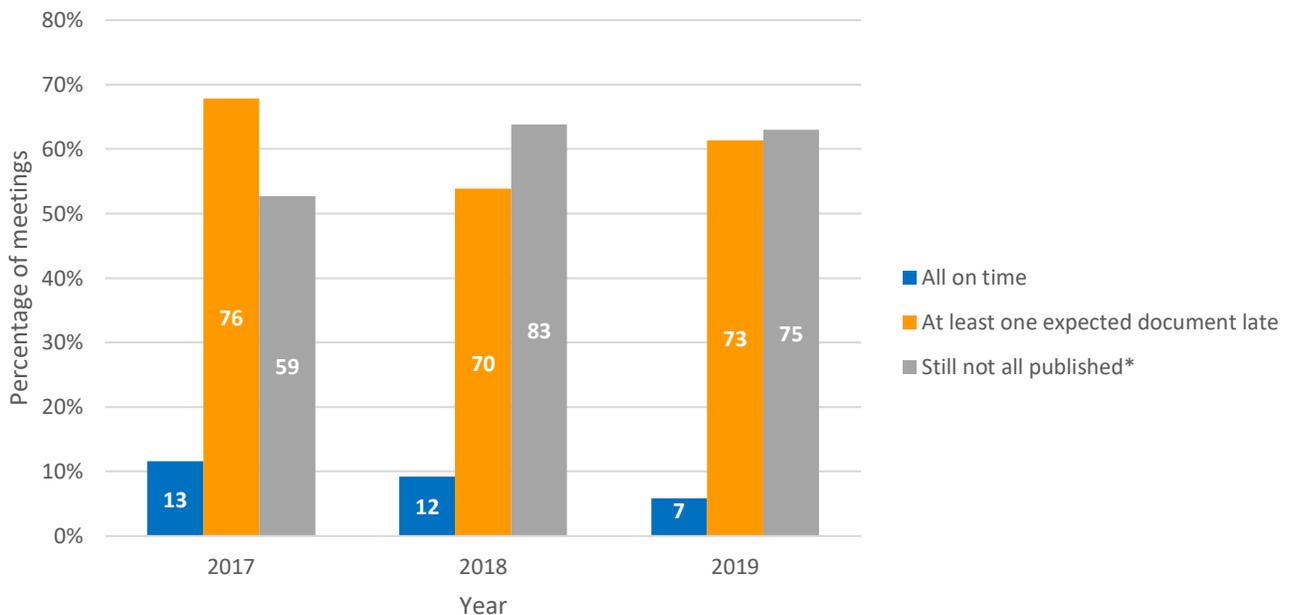


Figure 5. The percentage of Canadian Science Advisory Secretariat (CSAS) meetings held in 2017 (n = 112 meetings), 2018 (n = 130 meetings) and 2019 (n = 119 meetings) that had a) all their expected documents published within CSAS policy timelines, b) at least one expected document published outside of CSAS policy timelines, or c) had at least one expected document still not published as of July 1 of the following year. The number of meetings in each category is indicated in white font within the bars. Please note that categories are not exclusive (i.e., a meeting may have one expected document published late and while more documents are still expected to be published and therefore be counted in each category). \*As of July 1 of the following year.

As in 2018, no external-peer-review meetings held in 2019 resulted in the publication of *all* expected documents within CSAS policy timelines. In the case of 60.0 per cent of external-peer-review meetings (51 meetings), at least one document was published late. Meanwhile, we are still awaiting the publication of at least one document from 82.4 per cent of external-peer-review meetings (70 meetings). About one-third of external-peer-review meetings held in 2019 that were expected to produce Science Advisory Reports have yet to do so (24 out of 75 meetings). As in previous years, most of the meetings that had reports published in 2019 were published late, and most meetings are missing published Research Documents and Proceedings (Figure 6).

Over one-third of the external-peer-review meetings held in 2019 (36.5 per cent or 31 meetings) still have not produced a Science Advisory Report or a Research Document available to the public that summarizes the scientific evidence of management advice, which is more than in 2018 (32.9 per cent or 24 meetings). The majority of these meetings held in 2019 that still have not made their science advice publicly available pertained to assessments of population abundance (25 meetings), either in support of fisheries management (14 meetings) or the evaluation of potential species at risk (11 meetings).<sup>9</sup>

The situation is a little better for SRPs, which involve urgent and unforeseen meetings with less thorough review processes (i.e., internal peer review; usually no external reviewers). Approximately 20 per cent of SRPs held in 2019 (seven out of 34 meetings held) produced all expected documents within CSAS policy timelines. There were fewer SRPs with documents yet to be published compared to 2018, a decrease from 26.3 per cent (15 meetings) of

<sup>9</sup> I.e., in support of Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assessments

SRPs<sup>10</sup> in 2018 to 14.7 per cent (five meetings) in 2019. However, this is still nearly double the 8.7 per cent (four meetings) of SRPs from 2017 that had yet to produce documents. Just under half of the 2019 SRPs that have not produced any publicly available science advice pertained to assessments of population abundance, either in support of fisheries management (one meeting) or the evaluation of potential species at risk (one meeting).

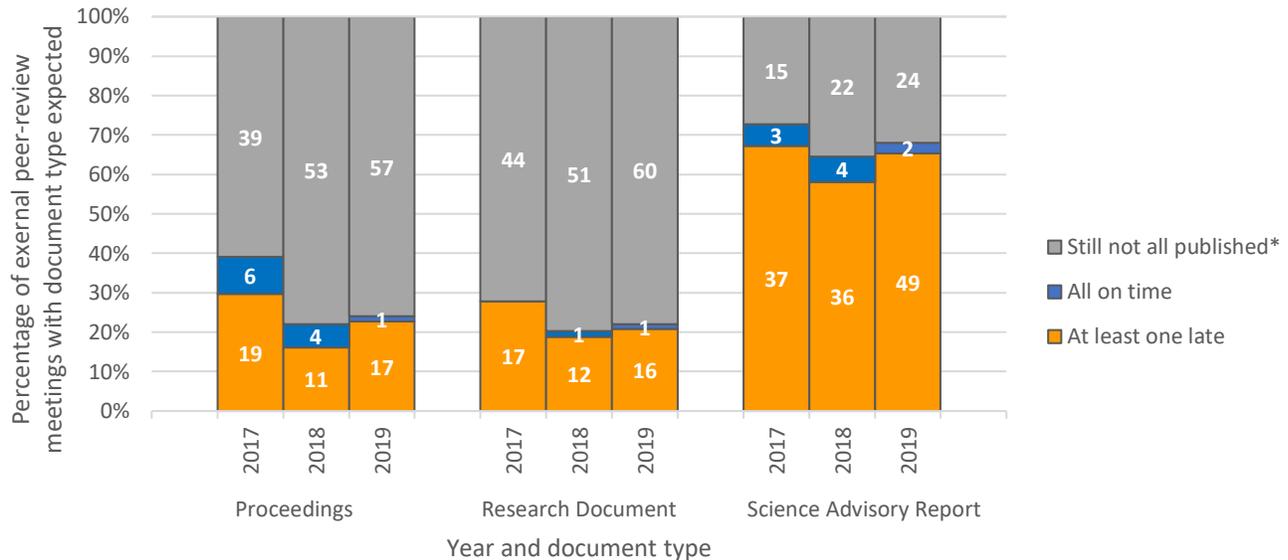


Figure 6. The percentage of Canadian Science Advisory Secretariat (CSAS) external-peer-review meetings held in 2017 (n = 66 meetings), 2018 (n = 73 meetings) and 2019 (n = 85) with expected documents for each document type that were published within and outside of CSAS policy timelines as of July 1 of the following year. The number of meetings in each category is indicated in white font within the bars and may not add up to the total number of meetings since not all meetings were expected to produce all document types. The sum of percentages does not always equal 100 per cent for all document types in each year as there can be some overlap in categories. For example, if a given meeting had at least one document published late and still has some expected documents of the same type not yet available, the total will be higher than 100 per cent. \*As of July 1 of the following year.

## Discussion

CSAS oversees the peer-review process of science related to the management of Canada’s fisheries and oceans (DFO 2020a). The resultant CSAS publications are the main source of scientific information about our oceans and their inhabitants. This formalized science peer-review process and transparency created by making documents publicly available is an exception among science-based federal departments in Canada (DFO 2019). Operation of CSAS as intended is therefore important not only to successfully manage fisheries and oceans but also to maintain the standard CSAS sets for other federal departments in the provision of science advice.

CSAS’s policy on the timelines for submission and publication of documents states that delays in producing documents can result in delayed management decisions and create the impression that advice is either being withheld or influenced, which in turn can undermine the credibility of the process (CSAS 2012, DFO 2019). Thus, it is concerning that less than five per cent of expected publications from CSAS meetings held in 2019 were published on time and within CSAS policy timelines. This represents a decrease in timeliness performance by about

<sup>10</sup> In 2018, this also includes one Science Special Response Process (SSRP), presumably a process like a regular SRP. This meeting type was not seen in 2017 or 2019. The 2018 SSRP pertained to a review of risks and benefits of Collaboration for Atlantic Salmon Tomorrow’s Smolt-to-Adult Supplementation experiment proposal, held January 22 to 23, 2018.

five percentage points over the previous two years (of meetings held in 2017, 10.9 per cent of expected publications were on time; of meetings held in 2018, 9.2 per cent of expected publications were on time). As was the case last year, overall publication rates (documents published on time and late, combined) of expected documents in 2019 remained at less than half (46.1 per cent published; 4.5 per cent on time, 41.6 per cent late).

Similar results were found when publications were examined by meeting. Only about six per cent of meetings held in 2019 had all their expected documents published within CSAS policy timelines, again a decrease in timeliness performance over the previous two years (12 per cent of meetings held in 2017; nine per cent of meetings held in 2018). Similar to last year, no external-peer-review meetings held in 2019 had all expected documents published within CSAS policy timelines, and over one-third (31 of 85 meetings) still do not have a Science Advisory Report or a Research Document available to the public to summarize the scientific evidence behind management advice. Just over 80 per cent (25 meetings) of these meetings that have not yet made science advice publicly available pertained to assessments of population abundance, either in support of fisheries management or to evaluate potential species at risk. Clearly, there is room for improvement in the timeliness of the publication of science in support of fisheries and oceans management in Canada and the resultant transparency of the evidence supporting those decisions.

As discussed last year (Oceana Canada 2019), an internal DFO evaluation of the entire CSAS process found similar results in its analysis of the timeliness of publications from meetings held between fiscal years 2013/14 and 2017/18 (DFO 2019). It found that approximately 33 per cent of the time, CSAS documents were not received by clients (e.g., managers) within required timelines, limiting the extent to which advice can be used for management decisions (DFO 2019). The internal DFO evaluation suggested several reasons for publication delays, validating many that were suggested in Oceana Canada's first assessment (Oceana Canada 2018) and discussed further in last year's assessment (Oceana Canada 2019). These reasons will not be discussed further here. The internal DFO evaluation also made recommendations to address the publication delays, which were reviewed, discussed and refined into recommendations by Oceana Canada (2019) to improve the timeliness of CSAS publications. Progress towards implementation of these are expanded upon below.

### ***Changing publication timelines policy and CSAS products***

One of the recommendations of the internal evaluation was to revisit and extend publication policy timelines (DFO 2019). It indicated that extended timelines may help mitigate capacity issues (both of DFO scientists and staff within the CSAS offices) until vacant positions could be filled. It was also intended to allow for notifications to and approvals from senior management. Science Advisory Reports and Science Responses are supposed to be published within 10 business days of submission to CSAS according to current policy timelines (CSAS 2012), but senior management requires two weeks' notice before documents are published (DFO 2019). These requirements do not align and leave essentially no time for formatting and translation. The evaluation expects that revised timelines could also provide the individuals responsible for completing the documents the flexibility to complete them while also addressing competing or new tasks (DFO 2019). The evaluation indicates that recommending extended timelines is intended to increase compliance rates by considering activities that were not originally required when original timelines were identified, and that timelines should be reviewed in consultation with scientists and CSAS clients (e.g., managers) (DFO 2019).<sup>11</sup> It also reiterated the importance of the best practice of ensuring documents are publicly available in a timely manner (DFO 2019).

It is unclear whether DFO is extending publication timelines. When updating this evaluation this year, Oceana Canada noted that the CSAS (2012) policy on the timeliness for submission and publication of documents is no

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<sup>11</sup> However, note that the policy on the timeliness of submission and publication of documents (CSAS 2012) was only seven years old at the time of the evaluation. The evaluation does not detail what new requirements now exist beyond the example provided.

longer present on the list of policies on the CSAS website.<sup>12</sup> However, it is still available on the internet,<sup>13</sup> unlike other missing but previously listed CSAS policies.<sup>14</sup> Thus, it is unclear if DFO is still intending to adhere to it. Given there are no new policies on the CSAS website about publication timeliness, and to enable comparisons to past assessments (Oceana Canada 2018, 2019), the details of the existing CSAS policy on timelines for submission and publication of documents (CSAS 2012) have been used for Oceana Canada's assessment to evaluate the timeliness of publications produced. It may be, however, that a new policy is in development. If timelines are to be extended, it should only be done after careful review and not result in publication timelines extending beyond current realized rates (see Table 2), particularly for Science Advisory Reports and Science Responses that are heavily relied upon during decision making. Final approved versions of these document types should be publicly available prior to decision making and preferably for discussions surrounding decisions with rights-holders and stakeholders.

Another possibility to improve publication timeliness compliance would be to streamline the document types published to reduce workload and translation costs. Even though altering the document types was not included as a recommendation of the internal evaluation report (DFO 2019), DFO's response to the findings included the development of new national standardized procedures *and products* by December 2020. Thus, it seems likely that there could be new document types and associated policy on publication timelines currently being developed. If so, this needs to be done carefully. Due to the differing content of each current publication type (see Background, above), it is difficult for those not present at meetings to truly evaluate the scientific evidence until all publication types are available. Through interviews, the internal evaluation found that Science Advisory Reports and Science Responses are used throughout the decision-making process (DFO 2019). Several people also noted that they use Research Documents and appreciate having access to detailed information on the data and analysis that informed the science advice available publicly during the consultation process for transparency reasons (DFO 2019). Few people noted use of Proceedings (DFO 2019), so if the department must streamline the number of document types published, it may be possible to cease the production of Proceedings if dissenting views and the list of meeting participants and affiliations are captured in Advisory Reports.

### ***Improvements in the last year***

Last year, Oceana Canada (2019) made nine recommendations to help improve the timeliness of CSAS publications and the communication of science advice used in decision making surrounding the management of our fisheries and oceans. There has been progress towards some of these recommendations that have been noted by Oceana Canada staff participating in CSAS processes in the last year:

- New staff have been hired at some CSAS offices, filling some of the vacant regional positions. This should help to reduce the workload in CSAS offices and immediately facilitate more timely dissemination of science information and advice. Although this was not reflected in the 2019 results here, new staff may not have been in place long enough to make a measurable difference, and impacts on publication rates are more likely to be seen in 2020.
- Some regions continued to hold external technical briefings of final science advice after high-profile meetings (e.g., northern cod stock assessment) with management, rights-holders and stakeholders. Additional briefings with media were also held after these high-profile processes, as recommended. This is an excellent means to ensure the advice is available to the public quickly. However, given that the two briefings often happen on the same day, some harvesters first hear results of population assessments in media reports, which may not be ideal. Additionally, this practice is not likely feasible for every meeting. To

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<sup>12</sup> <https://www.dfo-mpo.gc.ca/csas-sccs/process-processus/index-eng.html>

<sup>13</sup> <http://www.dfo-mpo.gc.ca/csas-sccs/process-processus/timelines-delais-eng.html>

<sup>14</sup> Such as CSAS's more recent 2018 Policy on the Translation of Documents, previously available here: <http://www.dfo-mpo.gc.ca/csas-sccs/process-processus/translation-traduction-eng.html>

support external technical briefings (with or without media) and fair and transparent decision making, finalized summary bullets of science advice along with the list of meeting attendees and affiliations could be officially published on the CSAS website as soon as possible after the meeting and prior to briefings or advisory meeting discussions. This would allow attendees time to process the information in advance and prepare questions. Scientists also often present summaries of CSAS meetings to advisory committees, which is good practice and should continue. But this often occurs the day advice is sought from committee members, limiting its utility if presented without preceding documentation. In early 2020, there was a noted improvement in some regions, with several advisory committees having members receive complete approved final drafts of yet-to-be published reports a few days in advance of harvest-level discussions. This allows attendees time to process the information in advance and prepare questions for presentations made during the meetings.

- Notifications are now being sent via email to all CSAS meeting participants in most regions when final versions of documents are available. This improved practice should be expanded to include the relevant advisory committee membership, if applicable. Further, a public listserv could be provided to which interested parties could sign up to receive monthly email updates of all new publications.

In its response to the internal evaluation, DFO indicated that it will develop and approve new national standardized procedures and products by December 2020. Thus, further changes and improvements are expected next year.

### *Summary*

Successful modern fisheries management requires evidence-based decision making that is supported by strong science (Melnychuk 2017). CSAS, within DFO, oversees the peer-review process of science related to the management of Canada's fisheries and oceans (DFO 2020a). The process is intended to provide the best possible science advice to decision makers. When science information is produced in a timely fashion to support decision making and made publicly available so that the basis of decisions is transparent, Canadians can have increased confidence in the management of our fisheries and oceans. Only then can decisions be independently evaluated in real time to ensure they promote the stability of healthy fisheries and the rebuilding of depleted stocks for the benefit of marine ecosystems, coastal communities and the fishing industry.

Unfortunately, for the third year in a row, Oceana Canada has found poor compliance regarding the timeliness of CSAS publications detailing science advice. Less than five per cent of expected documents from 2019 meetings were published within CSAS policy timelines. None of the external-peer-review meetings held had all expected documents published within CSAS policy timelines, and over one-third (31 of 85 meetings) still do not have a report (Science Advisory Report or a Research Document) available to the public to summarize the scientific evidence behind management advice.

An internal DFO evaluation of the entire CSAS process was finalized in January 2019 (DFO 2019). Generally, it found that CSAS is valued and well respected, but it identified several opportunities to improve the science advisory process, including the timeliness of the availability of science advice. Some progress was made by DFO towards these improvements in the last year, such as filling some vacant CSAS staff positions and providing more interactive forms of knowledge dissemination (e.g., technical briefings and email notifications of publications). Multiple modes of communicating science advice, well in advance of final decision making, is recommended, but this should not replace timely receipt of the detailed scientific evidence found in CSAS documents. In its response to the internal evaluation, DFO indicated that it will develop and approve new national standardized procedures and products by December 2020. With these, it is expected the reasons for delays will be addressed and corrected.

With recent declines in the health status of several marine fish and invertebrate stocks (Oceana Canada 2020) and an uncertain future in the face of climate change, addressing issues in the CSAS process now is of utmost importance. Requests for advice from CSAS are likely only going to continue to increase, as has been the case in recent years (DFO 2019). Canada's fisheries and oceans management is based on science, and the timely delivery of science advice is required to support the stability of healthy fisheries and the rebuilding of depleted stocks for the benefit of marine ecosystems, coastal communities and the fishing industry.

## References

1. CSAS (2010a). Policy on the Principle of Consensus. Canadian Science Advisory Secretariat. <http://www.dfo-mpo.gc.ca/csas-sccs/process-processus/consensus-eng.html>
2. CSAS (2010b). Policy on Publication of Non-CSAS Documents on the CSAS Website. Canadian Science Advisory Secretariat. <http://www.dfo-mpo.gc.ca/csas-sccs/process-processus/noncsas-nonsccs-eng.html>
3. CSAS (2011). Policy on Observers. Canadian Science Advisory Secretariat. <http://www.dfo-mpo.gc.ca/csas-sccs/process-processus/observers-observateurs-eng.html>
4. CSAS (2012). Policy on Timelines for Submission and Publication of Documents. Canadian Science Advisory Secretariat. <http://www.dfo-mpo.gc.ca/csas-sccs/process-processus/timelines-delais-eng.html>
5. CSAS (2020). Operational Guidelines for Science Response Processes (SRP). Canadian Science Advisory Secretariat. <http://www.dfo-mpo.gc.ca/csas-sccs/process-processus/srp-prs-eng.htm>
6. CSTA (1999). Science Advice for Government Effectiveness (SAGE). Council of Science and Technology Advisors. <http://publications.gc.ca/collections/Collection/C2-445-1999E.pdf>
7. DFO (2018a). A New Ecosystem Science Framework in Support of Integrated Management. Fisheries and Oceans Canada. <https://www.dfo-mpo.gc.ca/science/publications/ecosystem/index-eng.htm>
8. DFO (2018b). Search: Science Advisory Schedule. Fisheries and Oceans Canada. <http://www.isdm-gdsi.gc.ca/csas-sccs/applications/events-evenements/search-recherche-eng.asp>
9. DFO (2019). Evaluation of the Canadian Science Advisory Secretariat (CSAS), Project Number: 96175, Final Report, March 4th, 2019. Fisheries and Oceans Canada. <https://www.dfo-mpo.gc.ca/ae-ve/evaluations/18-19/96175-eng.html>
10. DFO (2020a). Science Advisory Schedule. Fisheries and Oceans Canada. <http://www.isdm-gdsi.gc.ca/csas-sccs/applications/events-evenements/index-eng.asp>
11. DFO (2020b). Search: CSAS Publications. Fisheries and Oceans Canada. <http://www.isdm-gdsi.gc.ca/csas-sccs/applications/Publications/search-recherche-eng.asp>
12. Government of Canada (2000). A Framework for Science and Technology Advice: Principles and Guidelines for the Effective Use of Science and Technology Advice in Government Decision Making. <http://publications.gc.ca/collections/Collection/C2-500-2000E.pdf>
13. Melnychuk, M.C., Peterson, E., Elliott, M. & Hilborn, R. (2017). Fisheries Management Impacts on Target Species Status. Proceedings of the National Academy of Sciences USA, 114: 178–183. <http://www.pnas.org/content/114/1/178>
14. Oceana Canada (2018). The Timeliness of Scientific Information in Support of Sustainable Management of Canada's Fisheries and Oceans. [https://oceana.ca/sites/default/files/the\\_timeliness\\_of\\_scientific\\_information\\_final\\_2018nov06.pdf](https://oceana.ca/sites/default/files/the_timeliness_of_scientific_information_final_2018nov06.pdf)
15. Oceana Canada (2019). The Timeliness of Scientific Information in Support of Sustainable Management of Canada's Fisheries and Oceans. [https://oceana.ca/sites/default/files/the\\_timeliness\\_of\\_scientific\\_information\\_2019.pdf](https://oceana.ca/sites/default/files/the_timeliness_of_scientific_information_2019.pdf)
16. Oceana Canada (2020). Fisheries Rebuilding Success Indicators: 2020. <http://www.oceana.ca/FisheryAudit2020>

## Tables

Table 1. The average number of days that documents were published after CSAS's policy on timelines indicated documents should have become available for all documents of each type resulting from Canadian Science Advisory Secretariat (CSAS) meetings held in 2019. See Figure 4 for an indication of the percentage and number of expected documents of each type published on time or still not published from these meetings.

Document type	Number of days after CSAS's policy on timelines indicated documents should have become available			
	Mean	Minimum	Maximum	Median
Proceedings	154.6	25	269	167.0
Research Document	135.2	1	289	134.0
Science Advisory Report	141.1	6	381	114.0
Science Responses	106.7	1	343	67.0
<b>All types</b>	<b>133.5</b>	<b>1</b>	<b>381</b>	<b>116.5</b>

Table 2. The average number of days after meeting end date until document publication for all document types (published late and on time) resulting from Canadian Science Advisory Secretariat (CSAS) meetings held in 2019. See Figure 4 for an indication of the percentage and number of expected documents of each type still not published from these meetings.

Document type	Number of days after meeting end date until document publication			
	Mean	Minimum	Maximum	Median
Proceedings	290.1	137	414	312.0
Research Document	267.7	135	434	236.0
Science Advisory Report	201.3	29	451	177.5
Science Responses	151.9	29	413	126.0
<b>All types</b>	<b>211.6</b>	<b>29</b>	<b>451</b>	<b>184.0</b>