The 23rd Annual Meeting of the North Pacific Anadromous Fish Commission (NPAFC) was held from May 11 to 15, 2015, in Kobe, Japan. At the Annual Meeting, plenary sessions and the Commission’s three standing committees, Enforcement, Finance and Administration, and Scientific Research and Statistics met to discuss issues related to salmon and steelhead in the NPAFC Convention Area in the high seas of the North Pacific.

The NPAFC is an international organization that promotes the conservation of Pacific salmon and steelhead in the North Pacific and its adjacent seas. It serves as a venue for cooperation in and coordination of enforcement activities and scientific research among its members. The vast majority of salmon catches in the North Pacific originate from NPAFC member countries, which are Canada, Japan, the Republic of Korea, the Russian Federation, and the United States.

This year, Koji Imamura was presented with the NPAFC Award in recognition of his long term leadership in international relations and ocean salmon fisheries management. For more details on his achievements and the award, please see the article on page 2.

At the Commission’s enforcement meetings, multilateral cooperative enforcement operations and regular information exchanges between NPAFC-member enforcement agencies were reviewed. In 2014 the combined multilateral efforts resulted in several significant enforcement actions. An article on these actions and recent enforcement activities is available on page 3.

The Committee on Finance and Administration (F&A) met and reviewed administrative issues. Several important decisions were reached regarding the organization of Secretariat staffing, continued scoping of an International Year of the Salmon (IYS) initiative, and for increased cooperation with other international organizations. In this newsletter there is a summary of the highlights of the F&A meeting (page 5) and a review of the current status of the IYS initiative (page 19).

At the NPAFC’s scientific meetings, leading salmon researchers from member countries reviewed new studies of Pacific salmon and steelhead in international waters and surrounding areas. In 2015, salmon research surveys are planned for areas in the Gulf of Alaska, the Bering Sea, the Northwest Pacific, and the Sea of Okhotsk. Researchers will examine conditions such as species abundance, migration, distribution, and growth of salmon at sea. Preliminary 2014 North Pacific-wide salmon catches were 0.86 million metric tonnes (392 million fish). An article on page 7 gives a detailed report on the information shared at the Commission’s scientific meeting.
Koji Imamura of Japan Received the 2015 NPAFC Award for Ocean Salmon Conservation and Management

Koji Imamura, retired President of the Japan Sea-Farming Association and National Federation of Medium Trawlers (Japan), was presented the 2015 NPAFC Award by the Commission. The award was given in recognition of his long-term leadership in the area of international relations and ocean salmon fisheries management.

Well-known for his collaborative approach to international relations, his careful work early on was what laid the foundations for NPAFC. Koji assisted in providing the leadership responsible for instituting a cooperative system among nations for biological research.

With Koji’s guidance during the early years of NPAFC, the Commission achieved sound, transparent, and efficient fiscal administration. He took every opportunity to strengthen international relations and provided impetus towards creating IUU (illegal, unregulated, and unreported) vessel lists for operations in the NPAFC Convention Area.

Koji is the only individual in the entire 23-year history of NPAFC to have served two separate terms as the organization’s President, in 1995-1997 and 2003-2005. A renowned consensus-builder, Koji used his leadership position at NPAFC to encourage all salmon-producing countries in the North Pacific to join the organization. His efforts bore fruit when the Republic of Korea decided to join NPAFC in 2003.

In addition to his NPAFC duties, Koji’s long career in international fisheries negotiations included serving for many years as the head of the Japanese delegation to the International North Pacific Fisheries Commission (INPFC), the predecessor organization of NPAFC.

The NPAFC Award was established in 2011. It is given to recognize an individual or group whose sustained and significant contributions in scientific research, enforcement, international cooperation, or management has helped improve the conservation of anadromous salmon and steelhead stocks in the North Pacific Ocean.

Koji Imamura of Japan is the recipient of the 2015 NPAFC Award. Photo credit: NPAFC Secretariat

Shigeto Hase (left) received the award from Junichiro Okamoto (right) on behalf of Koji Imamura. Photo credit: NPAFC Secretariat
At the 2015 meeting of the Committee on Enforcement (ENFO), fisheries enforcement agencies of NPAFC member countries reported on successful 2014 efforts in combating illegal, unreported, and unregulated (IUU) fishing on the high seas of the North Pacific.

IUU fishing continues to threaten the conservation and sustainability of North Pacific salmon resources. NPAFC member countries have worked hard and developed a well-coordinated surveillance and enforcement regime to reduce and eliminate this threat. This high level of coordination is epitomized by the exchange of information and the presence of personnel participating aboard one another’s patrol platforms.

Patrol by Canadian and United States fisheries enforcement aircraft from air bases in Japan helps maximize patrol duration and range. Facilitated coordination between Canadian flights and United States Coast Guard (USCG) patrol vessels was achieved by the assignment of Canadian fishery enforcement officers to the USCG District 17 office. Canadian aircraft flew with two Fisheries Agency of Japan (FAJ) fisheries inspectors aboard the aircraft. Japan Coast Guard air patrols were conducted with a USCG observer aboard to support coordination with surface ship patrols. And in a bilateral arrangement, the USCG hosted People’s Republic of China (PRC) Coast Guard (CCG) law enforcement officers aboard the USCG Morgenthau to increase the effectiveness of ship patrols.

These combined multilateral efforts in 2014 resulted in significant enforcement actions. Two suspicious vessels sighted by USCG air reconnaissance appeared to be rigged for transhipment activities. Based on these observations, INTERPOL released a Purple Notice to alert international enforcement authorities to suspected IUU transhipment activity by one of those vessels. The notification alerted the Republic of Korea who conducted a port state inspection of the suspected vessels.
when they arrived in their port. Inspections indicated the legitimacy of the vessels was suspect. Later, one of these vessels was detained in Russia for not having a valid fishing license.

In another case, a suspected high seas drift net (HSDN) vessel, Yin Yuan, was encountered by a Canadian CP-130 aircraft during its patrol with two FAJ inspectors aboard (See Newsletter: 36: 8-9). The Yin Yuan flew a Japanese flag, but Japanese inspectors confirmed it was not a Japanese vessel. Yin Yuan immediately removed the Japan flag upon being sighted by the Canadian patrol aircraft. Information about the Yin Yuan was relayed to the USCG Cutter Morgenthau, which was later able to locate the fishing vessel. This time the master claimed the vessel was Chinese. When a boarding party comprising the USCG and CCG fishery enforcement officers gained access to the Yin Yuan, the master admitted the net tube, net spreader, and 3.3 km of driftnet had been dumped over the side during the night. Upon investigation, half a ton of net-scarred salmon was discovered in the ship's freezer. Arrangements were made for the Morgenthau to escort the Yin Yuan to a rendezvous point in the East China Sea where custody of the fishing boat was transferred to a CCG patrol vessel for investigation and prosecution. The Chinese law enforcement officers aboard the Morgenthau were instrumental in the successful interdiction, seizure, escort, and transfer of the Yin Yuan to Chinese authorities.

After the Chinese legal process, the remaining fishing gear of the Yin Yuan was confiscated and the master was fined the maximum permitted in the circumstances (100,000 RMB approximately 16,300 USD). The salmon was seized and discarded as it was deemed unfit for human consumption. The Chinese government is currently pursuing further enforcement investigations against the ship’s owner.

Each NPAFC-member country is dedicated to the elimination of IUU fishing and illegal transhipment of fish at sea and in port. To this end, all the member countries met in the spring to carefully plan and coordinate their aircraft and ship patrol schedules to maximize effective coverage of the North Pacific area.

Multilateral NPAFC cooperative enforcement operations, regular information exchanges between member enforcement agencies, and a consistent enforcement presence in the North Pacific all work as effective deterreants against IUU fishing activities. These joint international commitments by governments show a path to success in efforts to detect, interdict, and prosecute vessels involved in IUU fishing. Such continued vigilance is critical in the ongoing efforts to curtail the large-scale high seas driftnet threat and a requirement for sustainable fisheries management and conservation of salmon in the North Pacific.
F&A Takes Big Steps with Major Decisions at the Annual Meeting
By Jeongseok Park
Chairperson of the Committee on Finance and Administration (F&A)

The 2015 meeting of the Committee on Finance and Administration (F&A) was held over two days at the 23rd NPAFC Annual Meeting in Kobe, Japan. The meeting was attended by the five Parties of the Commission.

We met to discuss many agenda items and our discussions included productive debates conducted in a cooperative manner. Our committee meeting had fruitful results, which helped NPAFC to move forward with a constructive and stable budget structure of the organization, and other NPAFC administrative issues. We noted the Commission’s budget was efficiently managed with frugality, while the Commission performed its planned activities during the 2014/2015 fiscal year.

One of the important outcomes this year was to restructure some personnel components in the Secretariat for the purpose of better matching the needs of the Secretariat, the capabilities of the staff, and their positions. Based on the suggestion of Executive Director Vladimir Radchenko and Canada’s proposal, we agreed to restructure some job classifications in the Secretariat. The Secretary’s position will be changed to Administrative Assistant and the IT/Administrative Assistant’s position will be changed to the Web/Publication Manager. The IT requirements of the Secretariat will be outsourced.

Recognizing particular inequities that a foreign employee whose income is levied by the NPAFC may also be subject to employment taxes in their home country, the committee adopted a system for NPAFC to reimburse an employee subject to these conditions for the taxes paid to their home country during their employment with the Commission.

Our committee recommended approval of two funding requests. One request was to hold a second scoping meeting...
for the International Year of the Salmon initiative by the Committee on Scientific Research and Statistics (CSRS). Another request was made by the Committee on Enforcement (ENFO) to send one of their members to Tokyo, Japan, to participate as an observer at the North Pacific Fisheries Commission Inaugural Meeting in September.

Mr. Minho Kang from the Republic of Korea was selected as the next NPAFC intern. His six-month term will start in September 2015. The committee agreed to increase the intern’s stipend to accommodate for the high cost of living in Vancouver, BC.

The F&A noted that the 25th Anniversary of NPAFC will come up in 2017. To consider how to observe this important milestone, a 25th Anniversary Working Group consisting of one member from each country will exchange ideas during the intersessional period under the leadership of Gary Smith of the US. Further discussion on how to make this a memorable event will be continued at the next Annual Meeting.

The committee accepted the invitation of the Korean Party to hold the 24th Annual Meeting, May 16-20, 2016, in Busan, Korea. The committee also accepted the invitation of the Canadian Party to hold the 2017 Annual Meeting in Canada. I look forward to hearing where in Canada the meeting will be held. This will be announced at the next Annual Meeting.

Upon hearing that Wakako Morris, NPAFC’s Administrative Officer, plans to retire at the end of this year, committee members expressed their deep appreciation to her for her almost 30 years of dedication, first to INPFC (NPAFC’s predecessor organization) then to NPAFC (see article on page 26). The committee recommended, and the Commission agreed, to invite Wakako to the 2016 Annual Meeting as a consultant to assist at the meeting.

This was my first experience being the F&A Chairperson at the Annual Meeting and I was a little bit concerned about it. However, thanks to the help and guidance from all F&A participants, especially our Executive Director, I successfully managed to perform this job.

I would like to take this opportunity once again to express my appreciation to all for the contributions, suggestions, and good ideas that promoted productive discussions and outcomes at the F&A meeting. I sincerely look forward to seeing everyone next May in Busan, my hometown.

Jeongseok Park was born and raised in Busan, Republic of Korea, and lived there for almost 30 years. He received his BSc and MSc, and he is completing the coursework for a PhD in Fisheries Resources Economics from Pukyong National University in Busan. His specific areas of interest include bio-economics of fisheries management; quota allocation schemes; and fisheries monitoring, control, and surveillance. Jeongseok worked for the Korea Maritime Institute as a researcher of Korean domestic fisheries issues, including social-economic assessments and evaluations. In 2006 he joined the International Cooperation Division of the Ministry of Oceans and Fisheries as Assistant Director. Since then, he has been representing his government as a Fisheries Negotiator at international fisheries organizations including the International Commission for the Conservation of Atlantic Tunas, Indian Ocean Tuna Commission (IOTC), International Whaling Commission, North Pacific Fisheries Commission, and other regional fisheries management organizations. He has served as the Vice-Chairperson of the IOTC since May 2013. At NPAFC, Jeongseok was appointed a Representative of Korea in 2010. From 2011 to 2014, he served as Chairperson of the Committee on Enforcement, and since then he has been Chairperson of the Committee on Finance and Administration. Jeongseok enjoys and appreciates the life-enhancing experiences that come from opportunities to visit diverse cultures of Western, European, African, and Arab peoples in the Pacific, Atlantic, and Indian Oceans during his fisheries management career. He married late in life (October 2014) and his wife is a beautiful artist of western painting. Jeongseok and his wife currently reside in Sejong, the Republic of Korea’s new administrative capital.
Report on the Committee on Scientific Research and Statistics

By Loh-Lee Low
Chairperson of Committee on Scientific Research and Statistics (CSRS)

The Committee on Scientific Research and Statistics (CSRS) conducted its annual meeting from May 11-14, 2015, in Kobe, Japan. All member countries participated with strong scientific representations. The meeting culminated with a three-day international symposium on the following theme: Pacific Salmon and Steelhead Production in a Changing Climate: Past, Present, and Future.

The following highlights of the CSRS meeting were excerpted from the committee report.

Pacific Salmon Commercial Catch Statistics

The history of Pacific salmon catches from North Pacific regions was updated. Preliminary total commercial catch in 2014 was 392.0 million fish or 864.2 thousand metric tonnes (Table 1). Catches were reported by the United States (345.7 thousand tonnes, 40.0% of total weight; Alaska totals 328.8 thousand tonnes), Russia (336.1 thousand tonnes, 38.9% of total weight), Japan (144.3 thousand tonnes, 16.7%), Canada (37.7 thousand tonnes, 4.4%), and Korea (437 tonnes, < 1%). Chum and pink salmon constituted the majority of the total catch (37.9% and 35.5% by weight, respectively). Sockeye salmon comprised 20.5% and coho salmon was 4.5% of the commercial catch by weight. Chinook comprised 1.4% and each of cherry salmon and steelhead trout comprised < 1% of the commercial catch by weight.
Temporal Patterns of Pacific Salmon Abundance and Hatchery Releases

Pacific salmon abundance in the North Pacific, as indexed by aggregate commercial catches, remains at near all-time high levels (Figure 1). The highest catches on record occurred during the four most recent odd-numbered years (i.e., 2007, 2009, 2011, and 2013) when more than 1 million tonnes were caught. More adult salmon were caught in odd-numbered years than even-numbered years because pink salmon are most abundant in odd-numbered years. There has been a recent falling trend in total catch in the last several even-numbered years (2010, 2012, and 2014).

Asian Catches—Pink and chum salmon dominate Asian catches. In general, catches remain at high levels and the catch in 2014 is in the same range of catches in the last five even-numbered years (Figure 2). Russia currently catches the largest proportion of the Asian catch, although in earlier years, Japan often caught a greater proportion; catches by the Republic of Korea are relatively minor.

North American Catches—In North America, the relative abundance of salmon species varies from north to south. In Alaska pink, sockeye, and chum salmon are the primary species; in Canada pink, sockeye, and chum salmon have been the most important; and in Washington, Oregon, and California, Chinook and coho salmon are the most abundant species. Interannual variability in the importance of various species in North America has been more pronounced during the last decade than in previous ones (Figure 3).

Hatchery Releases—Preliminary 2014 North Pacific salmon hatchery releases were 5.2 billion fish (Table 2). Total releases of approximately 5 billion have been fairly stable for the last couple of decades (Figure 4). Asian hatchery production has stabilized in recent years although there has been some reduction of chum and pink salmon releases in 2011 and 2014 (Figure 5). Favourable marine conditions for pink and chum salmon and improved hatchery technologies have played a role in increasing the abundance of chum and pink salmon in Asia.

### Table 1. Preliminary 2014 commercial salmon catches in Canada, Japan, Korea, Russia, and the United States. Commercial catches by foreign fleets in the Russian EEZ are not included.

<table>
<thead>
<tr>
<th></th>
<th>Sockeye</th>
<th>Pink</th>
<th>Chum</th>
<th>Coho</th>
<th>Chinook</th>
<th>Cherry</th>
<th>Steelhead</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>9,288</td>
<td>4,239</td>
<td>0,717</td>
<td>0,274</td>
<td>0,318</td>
<td>-</td>
<td>-</td>
<td>14,837</td>
</tr>
<tr>
<td>Japan</td>
<td>-</td>
<td>2,397</td>
<td>40,882</td>
<td>0</td>
<td>0,001</td>
<td>-</td>
<td>-</td>
<td>43,281</td>
</tr>
<tr>
<td>Korea</td>
<td>-</td>
<td>-</td>
<td>0,153</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0,153</td>
</tr>
<tr>
<td>Russia</td>
<td>14,788</td>
<td>108,477</td>
<td>43,237</td>
<td>5,106</td>
<td>0,110</td>
<td>0,004</td>
<td>-</td>
<td>171,722</td>
</tr>
<tr>
<td>USA</td>
<td>44,827</td>
<td>95,717</td>
<td>12,414</td>
<td>7,209</td>
<td>1,795</td>
<td>0,069</td>
<td>-</td>
<td>162,031</td>
</tr>
<tr>
<td>Alaska</td>
<td>44,085</td>
<td>95,716</td>
<td>11,236</td>
<td>6,276</td>
<td>0,506</td>
<td>0,001</td>
<td>-</td>
<td>157,820</td>
</tr>
<tr>
<td>WOC</td>
<td>0,741</td>
<td>0,001</td>
<td>1,178</td>
<td>0,933</td>
<td>1,288</td>
<td>-</td>
<td>0,069</td>
<td>4,211</td>
</tr>
<tr>
<td>Total</td>
<td>68,903</td>
<td>210,831</td>
<td>97,403</td>
<td>12,589</td>
<td>2,223</td>
<td>0,004</td>
<td>0,069</td>
<td>392,023</td>
</tr>
</tbody>
</table>

WOC: Washington, Oregon, and California

### Table 2. Preliminary 2014 hatchery releases in NPAFC member countries in millions of fish.

<table>
<thead>
<tr>
<th></th>
<th>Sockeye</th>
<th>Pink</th>
<th>Chum</th>
<th>Coho</th>
<th>Chinook</th>
<th>Cherry</th>
<th>Steelhead</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>92,107</td>
<td>22.275</td>
<td>78.504</td>
<td>10.712</td>
<td>35.930</td>
<td>-</td>
<td>0.334</td>
<td>239,862</td>
</tr>
<tr>
<td>Japan</td>
<td>0.194</td>
<td>122.948</td>
<td>1,767.938</td>
<td>-</td>
<td>-</td>
<td>11.944</td>
<td>-</td>
<td>1,903.024</td>
</tr>
<tr>
<td>Korea</td>
<td>-</td>
<td>28.250</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>28.250</td>
</tr>
<tr>
<td>Russia</td>
<td>13.883</td>
<td>357.660</td>
<td>592.331</td>
<td>3.684</td>
<td>0.999</td>
<td>0.594</td>
<td>-</td>
<td>969.152</td>
</tr>
<tr>
<td>USA</td>
<td>74.744</td>
<td>999.400</td>
<td>698.454</td>
<td>65.936</td>
<td>202.551</td>
<td>-</td>
<td>22.491</td>
<td>2,063.577</td>
</tr>
<tr>
<td>Alaska</td>
<td>60.223</td>
<td>998.665</td>
<td>651.320</td>
<td>26.867</td>
<td>9.246</td>
<td>-</td>
<td>-</td>
<td>1,746.320</td>
</tr>
<tr>
<td>WOCI</td>
<td>14.522</td>
<td>0.735</td>
<td>47.134</td>
<td>39.069</td>
<td>193.306</td>
<td>-</td>
<td>22.491</td>
<td>317.257</td>
</tr>
<tr>
<td>Total</td>
<td>180.928</td>
<td>1,502.284</td>
<td>3,165.477</td>
<td>80.332</td>
<td>239.481</td>
<td>12.538</td>
<td>22.825</td>
<td>5,203.865</td>
</tr>
</tbody>
</table>

WOCI: Washington, Oregon, California, and Idaho
Pink and chum salmon remain the primary species released from North American hatcheries (Figure 6). The relatively large numbers of Canadian enhanced sockeye salmon are produced in spawning channels.

NPAFC Documents

The functions of CSRS are facilitated by documents submitted from the parties. A total of forty-five documents were submitted for the 2015 meeting. The number of documents pertaining to the 2011-2015 NPAFC Science Plan components and other topics were the following:

1. migration and survival mechanisms of juvenile salmon in ocean ecosystems: n=15
2. climate impacts on Pacific salmon production in the Bering Sea (BASIS) and adjacent waters: n=13
3. winter survival of Pacific salmon in North Pacific Ocean ecosystems: n=2
4. biological monitoring of key salmon populations: n=25
5. development and application of stock identification methods and models for management of Pacific salmon: n=17
6. other topics: n=4

Proposed Salmon Research Survey Cruises

Every year, member countries conduct ocean salmon research survey cruises for the purposes of monitoring key salmon populations; conducting stock identification studies; and for gathering information on salmon abundance, distribution, growth, and habitat. In 2015, Japan, Russia, Canada, and the US will conduct ocean salmon survey cruises.

Japanese cruise plans for salmon research in 2015 are planned for the central Bering Sea (summer) and western North Pacific (spring). The R/V Hokko maru and the R/V Oshoro maru will conduct these surveys. In addition, Japanese research vessels are scheduled to conduct 15 high-seas research cruises for pelagic fishes and squids in the North Pacific.
Pacific Ocean in 2015. These surveys have a possibility of incidental salmon catch during fishing operations with driftnets, trawl, or saury dip-net.

Russian cruise plans for salmon research in 2015 will occur in the northwestern North Pacific (summer), western Bering Sea (summer and fall), and southern Okhotsk Sea and adjacent waters (fall). These surveys will be conducted by the R/V Professor Kaganovsky, R/V Professor Levanidov, and R/V TINRO.

Canadian cruise plans for salmon research in 2015 will occur in waters surrounding Vancouver Island, central British Columbia, and in the Salish Sea. These cruises will be conducted by the CCGS W.E. Ricker (summer, fall), CCGS Neocaligus (summer), and a chartered fishing vessel (summer).

United States cruise plans for 2015 are scheduled for Southeast Alaska (spring-summer), Gulf of Alaska (summer), southeastern Bering Sea (late summer-fall), and the northern Bering Sea (late summer). The survey vessels used will include R/V Sashin and F/V Northwest Explorer, a chartered trawl vessel, R/V Oscar Dyson, F/V Alaska Endeavor, and R/V Pandalus.

NPAFC International Symposium on Pacific Salmon and Steelhead Production in a Changing Climate: Past, Present, and Future

This symposium was held in Kobe, Japan, from May 17 to 19, 2015. Approximately 100 participants attended, mostly scientists from the five NPAFC member countries. The symposium functioned as a review of accomplishments of the 2011-2015 NPAFC Science Plan. The goal of the symposium was to utilize the best available information on marine ecology of salmonid populations to explain and forecast annual variation in their production (See article on page 12). Participants reviewed recent research on ecological mechanisms regulating marine distribution and production of...
anadromous populations, climate change impacts on salmonid populations, retrospective analysis of key populations as indicators of conditions in North Pacific marine ecosystems, and implications of stock identification and model development for management of salmon and steelhead. The proceedings of the symposium will be published in an NPAFC Bulletin following peer-review.

International Year of the Salmon (IYS)

The NPAFC is in the formative stages of promoting an "International Year of the Salmon" program. At the 2014 Annual Meeting, a Study Group was formed to scope the IYS initiative with regard to the following topics:

• scope of the program (Pacific-Atlantic, farmed salmon and other ecosystem considerations, etc.)
• benefits of the program
• potential for funding and identification of partners (NGO’s Industry, State and Federal Agencies, other RFMO’s, etc.)
• communications and outreach strategy
• identification of field and analytical research (Strategic Research Plan)
• starting year and duration

The Study Group convened a Scoping Workshop in February 2015 in Vancouver, Canada and drafted an IYS proposal. The initial idea is to conduct a coordinated 7-year salmon research program with involvement of other agencies to study the salmon life cycle, from eggs to adult returns. It may cost $30 million. The Commission has authorized a working group to conduct another scoping session that will involve potential sponsors of the IYS concept. An article describing the IYS initiative is on page 19.

Loh-Lee Low has participated in NPAFC science activities since the formation of the Commission. He is a graduate of the University of Washington with a summa cum laude Bachelor of Science degree in Fisheries, a Master of Science degree in salmon early life history, and a Ph.D. in population dynamics of groundfish resources in the Bering Sea. Loh presently serves as the international coordinator for the Alaska Fisheries Science Center and the Alaska Region of NOAA Fisheries. In this capacity, he serves lead science roles for the US delegations to this Commission, bilateral meetings with partner Pacific Rim countries, the Convention for the Conservation of Pollock Resources in the Bering Sea, the International Pacific Halibut Commission, and the new North Pacific Fisheries Commission. He is grateful to NOAA Fisheries for providing such a meaningful career in fisheries spanning 40 years. Loh is also appreciative to the NPAFC and its predecessor organization, the International North Pacific Fisheries Commission, for providing many opportunities to learn from great scientists on international fisheries issues. “Never in my wildest imagination, while growing up in a tropical city built around the confluence of two muddy rivers, would I have dreamt of spending a life-time career in the North Pacific region”.

Loh-Lee Low
The North Pacific Anadromous Fish Commission (NPAFC) hosted an international symposium on Pacific Salmon and Steelhead Production in a Changing Climate: Past, Present, and Future on May 17-19, 2015, at the Kobe International Conference Center, Kobe, Japan. The Organizing Committee members were James Irvine (Pacific Biological Station, Canada), Ju Kyoung Kim (Fisheries Resources Agency, Korea), Alexander Zavolokin (TINRO-Center, Russia), Edward Farley (Auke Bay Laboratories, USA), Nancy Davis (NPAFC Secretariat), and Shigehiko Urawa (Chairperson; Fisheries Research Agency, Japan).

A total of 107 participants from Canada, Japan, Korea, Russia, USA, and Taiwan gathered in the beautiful port city of Kobe. Masanori Miyahara (President of the Fisheries Research Agency, Japan) and Vladimir Radchenko (Executive Director of NPAFC) made opening remarks, and an outline of the symposium was introduced by the Chairperson of the Organizing Committee. There were five topic sessions, in which 11 invited, 28 oral, and 43 poster papers were presented during the three-day symposium. The program, abstracts, and presentations given at the symposium may be viewed at the NPAFC website (www.npafc.org).

Pacific salmon and steelhead trout are impacted by changes in climate occurring in long-term trends and short-term events. Understanding how climate change and variability impact their marine ecology is important to their future sustainability. Our symposium reviewed recent research on ecological mechanisms regulating marine distribution and production of anadromous populations, climate change impacts on salmonid populations, retrospective analysis of key populations as indicators of conditions in North Pacific marine ecosystems, and implications of stock identification and model development for management of salmon and steelhead. The goal of the symposium was to utilize the best available information on the marine ecology of salmonid populations to explain and forecast annual variation in their production.

**Topic Session 1: Migration and survival mechanisms of salmonids during critical periods in their marine life history**

Marc Trudel (Canada) and Ju Kyoung Kim (Korea) took charge as the Session Convenors. The invited keynote speakers were David Welch (Canada) and Kate Myers (USA).

**1a. Initial period of marine life**

A common hypothesis is that the initial period after migration to the sea is the most critical phase with respect to ocean survival of anadromous populations. However, this belief has not been universally adopted. In particular, Welch recommended retiring the current concept of critical periods and instead evaluating whether any particular life history period is really “critically” important.
Many presentations indicated considerable inter-annual variation in abundance, growth, and survival rates of juvenile salmon in the ocean. These variations may be related to climate-induced changes in habitat environments that operate at regional and local scales. Predation on juvenile salmonids by some predators is likely to change in the future as alternative prey respond to changing coastal environments associated with climate change, and predation by other predators may remain largely unaffected by such changes (Weitkamp et al.).

In southern areas of salmon distribution in the coastal North Pacific, such as Japan and California, increasing warming periods affecting ever expanding areas may well disrupt migration patterns of juvenile salmon as warming ocean temperatures can negatively impact their populations (Hayes and Harding, Kasugai et al.).

1b. Winter period

Historical winter research programs since the 1950s were well reviewed by Myers et al. In recent decades (1990s-2010s), new fisheries-oceanographic survey methods, stock-identification techniques, remote sensing technologies, and analytical approaches have expanded our understanding of the winter ecology of salmon. Myers et al. suggested that the development of quantitative multistage models of salmon ocean distribution linked to oceanographic features would help to identify key factors influencing winter distribution and improve understanding of potential climate change effects.

The ecosystems of the Western Subarctic Gyre and Gulf of Alaska provide major wintering habitats for various anadromous populations (Naydenko and Temnykh, Urawa et al.). Although the winter period has been identified as a defining phase for the biomass of anadromous populations, this hypothesis is uncertain due to limited information on their ocean life history and ecology during winter. Naydenko and Temnykh estimated that the reduction of lipid accumulation and somatic growth rate in overwintering salmon could be related to their seasonal cyclic changes of physiological processes, but not to poor food resources and prey availability in winter.

Chinook salmon increased energy stores with latitude, confirming genetic adaptation by northern latitude populations where increased energy stores are required to survive longer, darker, and colder winters (Moss et al.). Orsi et al. suggested that a critical marine period for Chinook salmon in Southeast Alaska occurs prior to summer (June) after their first ocean winter.

There is some evidence that overwinter mortality is size-selective in juvenile Pacific salmon, although there is little evidence to date that year class strength is regulated by overwinter mortality (Trudel et al.). Further tests of the critical period hypothesis will require direct estimation of overwinter mortality over several years.

The Session Convenors suggested the following research questions for future research.

(1) When and where do significant mortality events occur in the marine environment?
(2) How do these mortality events contribute to variability in marine survival?
(3) What is causing mortality of salmon in the ocean?
(4) Which fish survive better?
**Topic Session 2: Climate change impacts on salmonid production and their marine ecosystems**

This session was convened by Ed Farley (USA) and Olga Temnykh (Russia). Invited speakers included Suam Kim (Korea), Ryan Rykaczewski (PICES, USA), and Shoshiro Minobe (PICES, Japan). Papers dealing with the effects of climate change and climate cycles on salmon and steelhead production and ocean ecosystem function and structure were sought for this session.

Over the last three decades the climate statistics of the Pacific have exhibited a significant change that has impacted marine ecosystems (Rykaczewski and Lorenzo). There has been significant variation in marine production of Asian and North American salmonid populations that is linked to climate change. The recent CMIP5 (Coupled Model Intercomparison Project Phase 5) models show that warming is expected to be stronger in summer than winter over the Bering-Okhotsk seas and in the western subarctic North Pacific. Thermal habitats of salmon will generally shift to the north and west due to warming, and summer salmon habitat may shrink more than winter habitat (Minobe et al.). Variation in salmon growth from 3D-Nemuro models is consistent with Pacific Decadal Oscillation (PDO) variation and variation in total catch of salmon (Ueno et al.). Climate change may also impact the food web of masu salmon and their abundance in the Sea of Japan (Nagasawa).

Session 2 presenters felt there is a strong need for better information on ecological mechanisms regulating production of anadromous populations and on estimates of climate impacts on salmon populations in North Pacific marine ecosystems. Climate shifts can significantly alter the bioenergetics of the food chain. Session Convenors suggested the key for advancing this knowledge is to integrate understanding of physical climate changes with our understanding of the prey and energetics of salmon.

**Topic Session 3: Retrospective analysis of key salmonid populations as indicators of marine ecosystem conditions**

The Session Convenors were James Irvine (Canada) and Toshihiko Saito (Japan). Alexander Kaev (Russia) and Gregory Ruggerone (USA) were invited keynote speakers.

Over the past several decades, there have been significant variations in the marine production of Asian and North American anadromous populations that are linked to climate change. Anadromous populations can be considered as ecological indicators of marine ecosystems. Long-term monitoring of salmon populations, salmon ocean habitats, and their ecosystems can yield critical information for examination of changes in marine habitats. Time series information gathered on annual regional salmon production trends and biological and physical characteristics of salmon ocean habitat can provide the broad scale perspectives necessary for examining the underpinnings of ocean salmonid production, biological characteristics, and marine ecosystem conditions.

Studying the past (= retrospective studies) helps us better understand the present and the future. Ishida et al. showed archeological evidence for the presence of Japanese chum salmon in regions of suitable temperature (sea temperatures <16°C) as far back as 7,000 years ago. Their distribution expanded ~4,000 years ago during a period of cooling. Retrospective information such as this makes it reasonable to assume future declines in abundance and distribution as temperatures increase (Ishida et al.). The Convenors presented Ishida and his co-authors with the “Long Look Back Award” for their retrospective study, which covered the longest time period in the topic session. Many shorter term studies also showed linkages between water temperature and salmon productivity. Temperature related changes in marine survival appear to be responsible for variable returns of pink salmon in the Sakhalin-Kuril region over the last 45 years (Kaev).

In the recent steelhead low marine survival period, survival was more strongly influenced by temperature than by smolt size (McCubbing and Braun). Pink salmon survival patterns were consistent within geographic regions of Japan (similar temperature patterns) but differed among regions with different temperature patterns (Saito et al.).
Temperature is often an indicator of mechanistic responses, which may represent food linkages. Early marine effects on growth and subsequent survival are extremely important (sockeye, Tucker et al.; Chinook, Lindley et al.). Reduced pollock abundance, which may be temperature related, appeared to increase foraging opportunities for chum salmon in the western Bering Sea and led to a higher carrying capacity (Zavolokin and Radchenko). There was little evidence of intraspecific competition (Akenhead et al.), and reduced survival at low smolt numbers implied depensation (Tucker et al.).

As for density dependence related to carrying capacity, we need to think of ecosystem linkages and inter-specific competition. Pink salmon now represent more than 70% of all adult salmonids, and this abundance may have profound ecosystem consequences (Ruggerone et al.). While numbers of some far northern stocks have been recently increasing, average sizes of northern chum salmon have decreased (Golub and Temnykh, Lewis et al.), which might be due to significant changes in their feeding conditions in the marine period of their life.

Researchers should not forget the importance of freshwater factors. Freshwater growth of Alaskan Chinook salmon has decreased (Lewis et al.) while freshwater nutrient increases from large influxes of spawning pink salmon has increased freshwater growth and survival of steelhead (McCubbing and Braun). Understanding freshwater habitat capacity and perturbations can assist in understanding sockeye salmon survival (Akenhead et al.). Reduced diversity may diminish resilience during future periods of environmental variability (Japanese pink salmon, Saito et al.; Californian Chinook salmon, Lindley et al.).

The Session Convenors identified the following needs for future advancement:

1. more empirical data sets
2. continuing time series data collection
3. quantifying uncertainty in data
4. improving understanding of ecosystem linkages
5. increasing collaborations with climate modelers
6. increasing publicly accessible databases

**Topic Session 4. Application of stock identification and models for salmonid population management**

This session was convened by Jeffrey Guyon (USA) and Michio Kishi (Japan). Lisa Seeb (USA) and Randall Peterman (Canada) were invited keynote speakers.

**4a. Stock identification development and applications for management**

Accurate stock identification methods such as genetic, otolith mark analyses, chemical, and morphological techniques have been used to monitor stock-specific ocean distribution and abundance. Improvements in stock identification methods have continued to provide stock distribution information highlighting where and when salmonids migrate in the ocean. This information is critical for models incorporating ecosystem and environmental conditions to explore possible production scenarios and offer insights for management.

Genetic stock identification (GSI) has been an integral tool used by NPAFC-related scientific investigations for nearly two decades with research activities coordinated through the Working Group on Stock Identification. Genetics data are now routinely used to determine the distribution and migration routes of salmon in the ocean; provide real time management information for commercial fisheries; and identify stock origin of fish captured during illegal, unreported, and unregulated fishing (Seeb).

A long-term GSI program for juvenile chum salmon in the eastern Bering Sea suggested the brood-year strength of Yukon River summer- and fall-run chum salmon may be determined early in the first year of life (Kondzela et al.). In the central Bering Sea, single nucleotide polymorphism (SNP) markers were used to monitor stock-specific abundance of immature chum salmon for the forecast of adult returns, and considerable annual variation of stock- or age-specific abundance was reported by Sato and Urawa. In the same survey area of the central Bering Sea, the stock composition of sockeye salmon was monitored through an analysis of microsatellite DNA variation that identified fish from Alaska, Russia, and Canada and helping to support a migration route for the species (Beacham et al.).

The State of Alaska applies molecular tools (SNPs) to identify trends in stock composition of sockeye salmon as they return to Bristol Bay and Chinook salmon as they migrate up the Yukon River. These projects are now informing fisheries management in real time (Templin et al.). Canada has a similar genetic analysis program for the management of multi-run sockeye salmon stocks in the Fraser River (Latham et al.).

In the Okhotsk Sea, genetic identification of juvenile pink salmon was conducted to improve the forecast of spawning runs (Shipigalskaya et al.). Stock compositions were reported for juvenile sockeye salmon collected in the Bering Sea and Pacific Ocean waters off Kamchatka (Pilganchuk et al.).
The Session Convenors observed that the number of presentations in the modeling portion of this topic session was relatively few. They recommended that in the future more presenters consider applying descriptive as well as statistic models in their presentations on other topics.

**Topic Session 5. Forecasting salmonid production and linked ecosystems in a changing climate**

The Session Convenors were Alexander Zavolokin (Russia) and Richard Beamish (Canada), but unfortunately Alex could not attend the symposium. Richard Beamish, Masahide Kaeriyama (Japan), and Skip McKinnell (PICES, Canada) were invited to make keynote presentations.

Accurate forecasting of returning salmon abundances is of great importance to management and for anticipating future variations in production affected by a changing climate. Forecasts of salmon abundance serve at least two useful purposes, regardless of whether they are accurate or not (McKinnell). If a forecast is accurate, it provides time for meaningful preparation by harvesters and fishery managers. If a forecast is inaccurate, it keeps hubris in check and may serve as a guide for developing new research directions.

Current abundance forecast methods include Bayesian approaches to capture uncertainty in Fraser River sockeye survival and resulting returns (Grant et al.). The forecast probability distributions are wide, given uncertainty in the specific mechanisms influencing Fraser sockeye survival and the very dramatic changes in survival in recent years. Sibling models, which compare adult returns from a brood year’s younger age class to the subsequent age class, can be used as indicators of survival for the older ages. Forecasts produced by these models, though still highly uncertain, provide corroboration of abundance forecasts generated using alternative model forms.
Forecasting pink salmon returns is also challenging under conditions of a changing ocean climate because pink salmon only spend a single winter in the ocean before returning to spawn. Thus, they lack any leading indicator information generated from younger siblings (Orsi et al.). Early marine mortality of pink salmon can be highly variable and affects year class strength. Thus, conducting surveys assessing seaward migrating juveniles after this critical period can usually predict year class strength. However, subsequent ocean conditions during some years may impact pink salmon productivity. Of the ecosystem metrics considered, important variables for forecasting the adult pink salmon return are juvenile pink salmon CPUE, timing, percentage of pink salmon in the catch, a predator index, and the North Pacific Index.

Maximizing the amount of energy available for growth in the early marine period is a mechanism that increases survival among all Pacific salmon species (Beamish). Increased energy efficiency for growth of juveniles in the early marine period is a key to optimizing hatchery production. A focus for new research is determining marine conditions that optimize energy budgets for growth and discovering how climate-related ecosystem changes alter these energy budgets.

Conclusions

The NPAFC science plan is a long-term comprehensive guideline for cooperative international research to achieve the vision of the NPAFC Convention: “Conservation of anadromous populations in the North Pacific Ocean”. Member countries conduct national research programs under the plan. The goal of the current 2011-2015 Science Plan is to be able to explain and forecast the annual variation in Pacific salmon production (NPAFC Doc. 1255, available at www.npafc.org).

To provide the necessary focus for cooperative research under the 2011-2015 Science Plan, the Science Sub-Committee identified an overarching research theme, “Forecast of Pacific Salmon Production in the Ocean Ecosystems under Changing Climate,” and five research components:

1. migration and survival mechanisms of juvenile salmon in the ocean ecosystems
2. climate impacts on Pacific salmon production in the Bering Sea and adjacent waters
3. winter survival of Pacific salmon in the North Pacific Ocean ecosystems
4. biological monitoring of key Salmon populations
5. development and applications of stock identification methods and models for management of Pacific salmon
The symposium was essential for reviewing the current NPAFC Science Plan and developing a new plan for 2016-2020. A considerable amount of new information was acquired on the marine ecology of salmonid populations to help explain and forecast annual variation in their production. The response of salmon to climate-driven environmental changes is variable and differs by species, stocks, life stages, geographical locations, and/or seasonal timing. The future of salmon still remains uncertain under several alternate scenarios of climate change. Because of this, it is more important than ever that we promote new cooperative international research that provides better scientific information on the ecological mechanisms regulating production of anadromous populations and climate impacts in North Pacific marine ecosystems. Continued collaborative research on climate change impacts with relevant international partners such as PICES is encouraged.

Acknowledgements

Many individuals and organizations have contributed to making the symposium such a success. On behalf of the symposium organizers, I thank these organizations and individuals for their support. Topic Session Convenors ably organized and led their respective sessions. Invited speakers and oral and poster presenters gave excellent and thought provoking presentations. Thorough and kind support at the symposium was provided by staff of the Fisheries Agency of Japan and the Fisheries Research Agency. The following co-sponsoring organizations are sincerely appreciated for their significant contributions to the symposium.

- Fisheries Research Agency (www.fra.affrc.go.jp)
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- Hokkaido Stationary Net Fisheries Association
- North Pacific Research Board (www.nprb.org)
- Pacific Salmon Foundation (www.psf.ca)
- Pacific Seafood Processors Association (www.pspafish.net)
- North Pacific Marine Science Organization (PICES, www.pices.int)

Shigehiko Urawa works for the Hokkaido National Fisheries Research Institute, Fisheries Research Agency, in Sapporo, Japan. His current research emphasis is on the control of parasitic diseases of salmon, although his research pursuits have also concentrated on the stock identification and conservation of Pacific salmon. His research results have significantly clarified the distribution and migration routes of chum salmon throughout their entire ocean life by using genetic and otolith mark techniques. Shigehiko worked as the Deputy Director at the NPAFC Secretariat from 2006 to 2010. He is currently the Chairperson of the Science Sub-Committee (SSC) and the Working Group on Salmon Tagging (WGST), which conduct their business under the Committee on Scientific Research and Statistics (CSRS) of NPAFC.
International Year of the Salmon—It’s Alive

By Mark Saunders
Chairperson of International Year of the Salmon Working Group

The International Year of the Salmon (IYS) is alive and kicking!! The concept of the IYS is an intensive burst of internationally coordinated, interdisciplinary, stimulating scientific research focused on salmon, and their relation to people. New technologies, new observations, and new analytical methods, some developed exclusively during the IYS, will be focused on gaps in knowledge that prevent the clear and timely understanding of the future of salmon in a rapidly changing world.

At the 2015 Annual Meeting in Kobe, the Commission further endorsed the IYS concept and took a significant step in establishing a formal IYS Working Group. This was the culmination of a year of work by the IYS Study Group (SG).

The IYS SG was directed by the Commission at the 2014 Annual Meeting in Portland to conduct an in-depth scoping of the concept of an International Year of the Salmon. The SG held a two-day scoping meeting in February 2015 in Vancouver, BC, with 30 scientists drawn from all of the member countries to consider questions posed by the Commission, with particular attention focused on high-level scientific objectives and their feasibility. The scoping meeting was hosted at the office of the Pacific Salmon Commission (PSC). The PSC Executive Secretary, John Field, and his staff were exceptional hosts and they made valuable contributions to the workshop as well. The collegial atmosphere contributed to what was a very productive meeting. The report of the workshop is available in 2015 NPAFC Document No. 1602 at www.npafc.org.

The day following the scoping meeting, our IYS SG met at the NPAFC office in Vancouver to begin drafting our report to the Commission. I should especially acknowledge Robbie McDonald, who joined us to share his invaluable organizational experience in establishing the International Polar Year. Over the next several months the SG, with the assistance of Skip McKinnell, Marc Nelitz (ESSA Technologies), Nancy Davis, and Vladimir Radchenko, produced a workshop report, an IYS proposal, and a presentation for NPAFC.

I gave the IYS presentation to NPAFC at the First Plenary in Kobe, Japan, which was somewhat unusual. Generally, reports are given to the Commission at the Second Plenary after the committees have had the opportunity to meet. We wanted the Commission to be familiar with the proposal early-on at the meeting, so we obtained approval by email from the Committee on Scientific Research and Statistics (CSRS; our “parent” committee) in advance of the Annual Meeting. The report was well received at the Plenary and the IYS concept was supported. At its meeting, the CSRS took the significant step of forming a new IYS Working Group. The Commission asked the Working Group to clarify the potential core IYS partners, develop an agenda for the second scoping workshop, and provided funding for a second scoping meeting to be held in early 2016.

Several weeks after the Kobe meetings, I had the pleasure of attending the 32nd Annual Meeting of the North Atlantic Salmon Conservation Organization (NASCO) on June 2-5 in Goose Bay,
Labrador, Canada, on behalf of NPAFC. I was there to seek their support for and potential partnership in the IYS. The IYS concept was again very well received and the NASCO Council asked “the NASCO Secretary to liaise with NPAFC on arrangements for an IYS and to consider NASCO’s possible involvement in, and contributions to, such an initiative”. In addition to the successful reception of the IYS concept by NASCO, I was struck by the similarity of scientific issues facing investigators working on Atlantic salmon with those of us working on Pacific salmon. I regret not having been engaged with NASCO earlier because there are substantial benefits to be gained in collaboration. Even if the IYS concept should fail, NPAFC and the CSRS should take steps for formally engage with NASCO in the future.

All this now sets the stage for a second scoping early in 2016 to refine the science objectives, identify partners, and develop a business plan. Over the next year, I look forward to working with the IYS Working Group, many of you within the NPAFC family, and our potential partners across the salmosphere* to take another step closer to making this exciting initiative a reality.

* The salmosphere is the current and future geographic range of salmon in the Subarctic and Arctic.
How Close are Salmon and Tuna? (with regard to the conservation of stocks)

By Vladimir Radchenko
NPAFC Secretariat

As any biologist knows, salmon and tunas are groups of fish, which differ systematically at the level of order. Order, in a hierarchical classification of living organisms, is generally a first constituent of class, the Class Pisces (fish) in this particular case. However, there may be more similarities between salmon and tuna than one might think.

If you meet the word combination “salmon as well as tuna” somewhere, it may well come from a recipe-book or healthy eating advice column, like the thesis “salmon and tuna are both large fatty fish offering excellent health benefits for those consuming them”. But there are commonalities between salmon and tuna that extend beyond the facts that they are both fish and both healthy. There is something to learn from enforcement approaches to tuna fisheries management that is relevant to salmon conservation.

Starting from the first steps in its history, NPAFC considered intergovernmental organizations that conduct data collection, scientific monitoring, and management of tuna and tuna-like resources (referred to here as tuna regional fisheries management organizations, RFMOs) as potential partners and welcome guests at the Commission’s annual meetings. Starting at the inaugural NPAFC Annual Meeting in 1993 in Vancouver, the Committee on Scientific Research and Statistics (CSRS) recommended annually inviting observers from three tuna RFMOs out of the total of 11 international organizations invited.

In general, this partnership may be explained by the history and development of the world’s fisheries, in particular tuna fisheries. The first mention of commercial tuna fisheries in the Pacific Ocean can be traced back to 1903. The total world catch of tunas increased steadily to a level of half million tonnes in 1950. Then in the next stage, there was a sharp increase of fishing capacity with the building of larger industrial fishing vessels, the development of more efficient freezers, better equipment for determining vessel positions, and the use of radio buoys. Tuna fishing efforts also grew dramatically, and the total tuna harvest peaked at almost 4 million tonnes at the end of the previous century. Due to high market demand, harvest continued to grow in the current century and set a new record in 2012. That year more than 5.5 million tonnes of tuna were harvested and that number grew to more than 7.0 million tonnes when combined with tuna-like species (see the FAO Report “The State of World Fisheries and Aquaculture”, 2014).

With such a huge increase in harvest, several important tuna stocks in different areas of the World Ocean were depleted by overfishing. Among the seven principal tuna species, one-third of the stocks were estimated as “fished at biologically unsustainable levels” (overfished) in 2011. Correspondingly, distant water fishing nations introduced more and more mutually-agreed regulatory measures to prevent stock depletion. Five tuna RFMOs were established with the aim of conserving and sustainably managing stocks in different oceans.

The first RFMO to manage tuna was created as far back as 1949, well before the United Nations convened the Conference on the Law of the Sea in 1974. This was the Convention for establishment of an Inter-American Tropical Tuna Commission (IATTC). In 2007, five tuna RFMOs harmonized their activities in key areas like by-catch management, coordinated scientific efforts, reducing fishery fleet capacity, coordination of decision-making guidelines, and compliance and enforcement. In March 2011, the Indian Ocean Tuna Commission (IOTC) became the first RFMO agreeing to implement the conditions of the FAO
Port State Measures Agreement even before it will have become globally binding. These tuna RFMOs and their regulatory processes have highly influenced the development of contemporary fish stock management processes and progress in conservation networks.

* * *

In mid-January 2015, the NPAFC Secretariat received a letter from Gabriele Goettsche-Wanli, Director, Division for Ocean Affairs and the Law of the Sea (DOALOS), on behalf of the UN Secretary-General, inviting NPAFC to attend the March 2015 11th round of Informal Consultations relating to the 1995 Fish Stock Agreement.

The relationship between NPAFC and DOALOS has a long history. Until recently, it has not amounted to more than a mere exchange of information. In 1999, there was communication regarding the NPAFC competency in conservation and management of straddling fish stocks and highly migratory fish stocks. The opinion was expressed by the Commission and confirmed by the DOALOS that the 1995 Fish Stock Agreement applies specifically to stocks covered by the provisions of Article 63, paragraph 2 (straddling fish stocks) and Article 64 (highly migratory fish stocks) of the United Nations Convention on the Law of the Sea (UNCLOS). The Agreement is not applicable to anadromous stocks, which fall under the provisions of Article 66 of UNCLOS. However, requests of information by DOALOS on developments related to the Agreement are customarily sent to all organizations and arrangements dealing with fishery stocks conservation and management, including NPAFC.

After 1999, the DOALOS invited NPAFC to attend the 5th through the 8th rounds of Informal Consultations.

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**Article 66. Anadromous stocks**

1. States in whose rivers anadromous stocks originate shall have the primary interest in and responsibility for such stocks.

2. The State of origin of anadromous stocks shall ensure their conservation by the establishment of appropriate regulatory measures for fishing in all waters landward of the outer limits of its exclusive economic zone and for fishing provided for in paragraph 3(b). The State of origin may, after consultations with the other States referred to in paragraphs 3 and 4 fishing these stocks, establish total allowable catches for stocks originating in its rivers.

3. (a) Fisheries for anadromous stocks shall be conducted only in waters landward of the outer limits of exclusive economic zones, except in cases where this provision would result in economic dislocation for a State other than the State of origin. With respect to such fishing beyond the outer limits of the exclusive economic zone, States concerned shall maintain consultations with a view to achieving agreement on terms and conditions of such fishing giving due regard to the conservation requirements and the needs of the State of origin in respect of these stocks.

(b) The State of origin shall cooperate in minimizing economic dislocation in such other States fishing these stocks, taking into account the normal catch and the mode of operations of such States, and all the areas in which such fishing has occurred.

(c) States referred to in subparagraph (b), participating by agreement with the State of origin in measures to renew anadromous stocks, particularly by expenditures for that purpose, shall be given special consideration by the State of origin in the harvesting of stocks originating in its rivers.

(d) Enforcement of regulations regarding anadromous stocks beyond the exclusive economic zone shall be by agreement between the State of origin and the other States concerned.

4. In cases where anadromous stocks migrate into or through the waters landward of the outer limits of the exclusive economic zone of a State other than the State of origin, such State shall cooperate with the State of origin with regard to the conservation and management of such stocks.

5. The State of origin of anadromous stocks and other States fishing these stocks shall make arrangements for the implementation of the provisions of this article, where appropriate, through regional organizations.
in 2006-2009 and meetings of the UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea in 2003-2013. The Secretariat responded to DOALOS invitations that it would not attend due to budget restrictions or overlapping meetings. However, the NPAFC Secretariat has submitted written information to the UN Secretary-General Report on “Oceans and Law of the Sea” in 2001, 2007, 2014, and 2015. Information on NPAFC was included in the 2014 Report of the Secretary-General to the UN General Assembly (see www.un.org/depts/los/generalAssembly/contributions_2015/NPAFC.pdf).

Those invited to the 2015 11th round of Informal Consultations (including NPAFC) were asked to focus on two questions:

1. In which areas is implementation of the Fish Stock Agreement and the recommendations adopted at the Review Conference in 2006 and 2010 proceeding generally well, and in which areas could such implementation be strengthened?

2. What means could be proposed to strengthen further the substance and methods of implementation of the Fish Stock Agreement?

The two questions reminded me of an important issue of concern to the Committee on Enforcement (ENFO). At the 2014 NPAFC Annual Meeting, the Russian Party discussed the possibility of developing a recommendation on general procedures related to stricter treatment of vessels of non-contracting parties engaged in illegal, unreported, and unregulated ( IUU ) fishing activities in the Convention Area. As there were no proposals brought forward immediately, ENFO decided to compile a list of possible actions to be taken against non-party vessels during the intersessional period, but no proposals were received. After considering the focus of the 11th round of Informal Consultations, it seemed to me that discussion of the second question might have particular relevance to the issue of treatment of non-contracting parties engaged in IUU activities.

As mentioned, the 1995 Fish Stock Agreement applies to straddling and highly migratory fish stock and not to anadromous fish. However, this agreement does serve as the fundamental tool for the conservation and management of pelagic fishes with ecology and conservation challenges similar to Pacific salmon. Because the NPAFC Convention prohibits directed fishing for anadromous fish in the Convention Area, the Commission does not deal with such matters as access to fisheries, harvest allocation, capacity of the fishing fleets, reference points for fishery stocks, and many other items related to fisheries management. However, principles of at-sea fishery and environmental compliance, and enforcement and conservation policies that operate in the field of international relations are universal tools for all regions of the World Ocean and for protected species.

Upon approval of my idea to attend the 11th round of Informal Consultations by the NPAFC President Junichiro Okamoto, I made the necessary arrangements and travelled to New York to participate at the meetings from 16 to 17 March, 2015.

*  *  *

It is hard to imagine a more emotive and impressive meeting venue than the United Nations Headquarters in New York. It opened in 1951 and was visited by more than 8.5 million people over the first ten-year period. The latest visitor statistics tell that about half million people from around the world take UN guided tours, which are performed in 16 languages. The building complex supports the diplomatic operations of 192 nations and hosts about 8,000 events each year, including meetings, exhibitions, festivals, etc. Event participants alone comprise no less than 350,000 people annually.

Despite being a very busy place, gaining access to the UN grounds is a rather simple and relatively quick procedure. A long line that grows at the UN Pass Office door before opening in the morning is quickly sub-divided by event name, status of invitation, and first-issued passes or renewals. Fifteen minutes is enough to receive a new ID card with a photo. Across 1st Avenue behind the security guard is the famous No Violence statue reflecting the principle of global international cooperation symbolized by the UN.

The Assistant Secretary-General for Legal Affairs, Stephen Mathias, opened the 11th round of Informal Consultations at 09:10 a.m. Observers from 30 party states of the 1995 Fish Stock Agreement and 17 non-party states, United Nations specialized agencies, programmes and bodies, as well as other intergovernmental and nongovernmental organizations attended the meetings. In his opening remarks, Mathias stressed the importance of the conservation and sustainable use of fisheries resources for ensuring food security, economic prosperity, poverty alleviation, and sustainable development, particularly for developing states. He noted that the Philippines had recently became party to the 1995 Fish Stock Agreement, bringing the total number to 82. Representatives applauded the opening remarks and Chile’s announcement of its intention to become 83rd party to the Agreement by October 2015. I was glad to meet Oleg Rykov, representative from the Russian Federation, who attended the 2014 ENFO meeting and with whom we might most usefully discuss the main topic of my interest.
During the meeting, several delegations emphasized the important role that RFMOs play in the implementation of the 1995 Fish Stock Agreement. It was mutually understood that RFMOs should encourage further ratifications of the Agreement through non-party involvement in its implementation. Arni Mathiesen, Assistant Director General of the Fisheries and Aquaculture Department at FAO, addressed the gathered audience via video teleconference from Rome saying that conditions leading to success in such involvement should include a clear set of methods and objectives, political endorsement and leadership, and financial support.

Thorough attention was paid to the Assistance Fund, which was specially established by the UN to provide financial support to developing states, to assist them in the implementation of the 1995 Fish Stock Agreement. Goettsche-Wanli reported that the Fund was currently depleted. In this regard, she drew attention to the call in UN Resolution 69/109 for further contributions to the Fund. Driss Meski, the International Commission for the Conservation of Atlantic Tunas (ICCAT) Executive Secretary, noted with regret the lack of money in the Fund in light of the important role it played for members of ICCAT and other RFMOs. He called for wider procedural flexibility to access the Fund, so that states and/or RFMOs could more easily benefit from it. Luckily, the delegation of Norway announced its government’s contribution of USD $200,000 to the Fund and encouraged others to do the same.

The Port State Measures Agreement (PSMA) received close consideration during the meeting. The PSMA sets global minimum standards for measures taken by states in their ports regarding vessels engaged in IUU fishing or related activities that support such fishing. Mathiesen reported that the FAO had a global programme promoting the benefits of the PSMA, funded by Norway, and drew the audience’s attention to a database on port state inspections that would also be part of the Global Record of fishing vessels, refrigerated transport vessels, and supply vessels that is being established by FAO. As conceived, the Global Record will create synergies with other international instruments like the PSMA and the Voluntary Guidelines for Flag State Performance. A number of delegations emphasized the importance of PSMA and other market-based regulatory measures. Good news was reported by Canada and Republic of Korea, who announced their intention to ratify the PSMA, and by Thailand declaring it would be signing the agreement soon.

Discussion of the PSMA led me to recall that the NPAFC has been monitoring progress by its member countries in signing and ratifying the PSMA since 2010, in accordance with the recommendations of the Commission’s Performance Review Panel. Since the 2012 Annual Meeting, all Parties have explained their current situations and their plans regarding the PSMA. The prospects of the PSMA gaining world-wide acceptance is promising, especially with the growing importance of this as a tool to prevent, deter, and eliminate IUU fishing. Early ratification of PSMA by NPAFC member countries will be an
important step towards the stricter treatment of vessels of non-contracting parties that are engaged in IUU activities in the Convention Area. Moreover, the NPAFC should encourage non-members to become parties to the PSMA at every opportunity by mainstreaming the agreement’s objectives into all areas of international cooperation.

Meski reported at the meeting that the ICCAT has a sophisticated system based on 27 criteria to allocate fishery rights among its member countries. These criteria were designed to prevent, deter, and eliminate IUU fishing, particularly vessels fishing under a flag of convenience. In particular, a contracting state can lose their fishing allocations partially or fully, if their flagged vessels or nationals have been implicated in IUU fishing. Furthermore, five tuna-related RFMOs have agreed to create harmonized IUU vessel lists. In 2011, five tuna commissions have approved the document, Basic principles for adopting measures for cross-listing vessels listed as IUU by other RFMOs.

Information shared at the meeting emphasized the point that among the non-member states regularly invited to send observers to the Commission’s annual meetings, the People’s Republic of China and Taiwan are members and Thailand and Indonesia are cooperating non-members of the Western and Central Pacific Fisheries Commission (WCPFC). New opportunities have materialized for the NPAFC to develop mutually beneficial inter-organizational cooperation with other RFMOs, such as the WCPFC, in its participation in the Regional Fishery Body Secretariats’ Network (RSN) activities and other cooperative networks.

Consolidation of RFMOs’ enforcement efforts can evolve from being solely based on information exchange to relationships focused on harmonizing actions on monitoring, control, and surveillance. Such a process could include joint meetings, development of consolidated lists of IUU fishing vessels and/or vessels of interest, participation in each other’s observer programs, etc. Undoubtedly, the NPAFC can strengthen efforts to prevent, deter and eliminate IUU fishing by vessels flagged by the aforementioned states through enhanced cooperation with WCPFC and other tuna-related RFMOs. Developing possible cross-listing of IUU vessels with other RFMOs is something that NPAFC should explore.

At the May 2015 meeting in Kobe, the ENFO committee started a discussion about the stricter treatment of vessels of non-contracting parties engaged in IUU activities. I hope this summary of the 11th round of Informal Consultations will be helpful in urging progress on an approach to solving this issue.

Although salmon and tuna are not the twin fish of the Pisces constellation, both these fish are of paramount importance for the world’s fisheries and it would be fair to recognize them both as icons in the sphere of fish stock conservation and fishery management.
Long Time NPAFC Staff Member, Wakako Morris, Announces Her Retirement

By Wakako Morris
NPAFC Secretariat

At the 2015 Annual Meeting, our cherished Administrative Officer, Wakako Morris, announced she would be retiring this year. After receiving many gracious sentiments from the delegates, she remarked about what her tenure at NPAFC has meant to her. The following is the text of her remarks.—Editor

My dear NPAFC delegates; at the end of my time with the Commission, please allow me to test your patience one last time in listening to my words to you.

I never thought the day would come when I have to say goodbye to my beloved Commission and to all of you. The Commission has been so good to me, I just cannot leave without making some thank-you remarks.

I was first hired for the INPFC by Bernie Skud, who passed away only last year. I was still fairly new to the country [Canada] then, and still very Japanese, having those beautiful qualities of quietness, humility, modesty, all that... which I don’t know how, but have now all disappeared. When I was told I would be going to the Annual Meeting in Anchorage, it was only less than a month after I started. I didn’t know my job at all, and I was very nervous and apprehensive about the procedures, and about meeting the Commission’s people.

On the very first night I arrived at the meeting site, the very first person to approach me was, of all the people, Dick Beamish, then other Canadian scientists followed. I remember there were about five of them who surrounded me, showering me with questions: who am I? what am I? where did I come from? did I know the differences between Canadian and American scientists? and with jokes, which I didn’t quite understand or appreciate. My English was not good enough to understand Dick’s jokes and I was too Japanese to come back at him, then. And Leo Margolis asked me how long I was going to stay with the Commission. How could I tell it back then?! After that Canadian inquisition, I thought to myself, er... probably not so long. That was 30 years ago.

I’ve seen INPFC transformed to NPAFC. I came just at the last part of the prosperous fishing era for Japan; I say “prosperous” judging only by the gorgeous receptions the Japanese fishing industry put out at the meetings. I thought, “what a great place to work!” Then came the more somber and totally different atmosphere of NPAFC, with enforcement members in uniforms. I felt a little intimidated by them, but soon found out that they were no different from any of the scientists or administrators, very ordinary really. I loved working with them as they were/are very efficient and precise, very trusting people. I must add that the scientists are just as efficient, trusting, and quite fun! Until then, I had never met any Russians, let alone worked with them. Wow, the Russians have arrived, I thought. But after working with all the Russians, I discovered that the mystery of the Russians soon dissipated, they were just as normal as the rest of us. Then came the Koreans, who treated me just the same, with warmth and kindness. My cultural boundary was extended and how I enjoyed working so closely with all different nationals.

I have loved my job, and I have always worked with pride. That pride came from working with such highly esteemed people of the Commission. I also have so many good memories with so many different people of the Commission. Somehow, my good memories are not making budgets or financial statements, but they are coordinating karaoke or hula dance competitions at meeting receptions, singing and dancing silly with the scientists and enforcement people, and sneaking out during the meetings to buy the necessary competition prizes. We worked hard and played hard. But seriously, I couldn’t have done my job without the help of so many people.

I am truly honoured to have spent most of my working career in such a prestigious company. I want to thank all the Parties: Canadians, Americans, Russians, Koreans and the Japanese; Gary [Smith], Doug Plenary Session participants immediately after Wakako Morris completed her remarks.
I am so appreciative to the Commission that treated me so kindly, with generosity, and its people who treated me with patience, with smiles and laughter all these years. Thank you for allowing me to be a part of this Commission’s life. I include in this, my dear interpreters, all of you who have become my good friends after working with you and knowing you for so long.

I’m very saddened that my other long-time colleague, Paul Niemeier, could not be here today. I wanted to thank him today for being my English grammar teacher for so many years helping me with reports, adding the article “a” or “the” where I missed them and taking them out when I added them unnecessarily. I wanted to tell him today “thank you Paul for all these years, but you didn’t do a good job, after 30 years I still haven’t learned it”.

Then I want to give my special thanks to Vladimir [Radchenko] and Nancy [Davis] for putting up with me every day in the office. Vladimir, I learned so much from you in the last short two years, your thoroughness, your wise directorship and guidance. Nancy, what can I say, your husband is right, he said we are like a husband and wife, we finish each other’s sentences. We were all a real good team, such a happy family in the office. I will truly miss you both so much. And thank you to our newest member, Jennifer [Chang], our new Secretary, now an Administrative Assistant, who joined us only last month. And like me 30 years ago, she has been thrown in at the last minute. Jennifer is a very hard worker and efficient. You will be in her good hands.

I don’t want to make this sound like the speeches at the Oscars, but I have one more last person to thank, if you allow me mentioning in your presence: my husband Alan, who is here today for the first time in 30 years to accompany me to the meeting. I want to tell you that he is the reason I’m here today with you, he is the reason I took this job 30 years ago because he promised me that he would help me with my work, and he did. He is the reason I could devote myself so much to the Commission. I couldn’t have accomplished much in my job without his help, such as giving me advice on accounting and finances, and correcting my English grammar when Paul was not there. Alan shuffled his busy working hours and days to look after our then two little sons when I was away at meetings. He did all the house chores when I was too busy at work. Without his support, I couldn’t have worked for the Commission.

Thank you, Alan. Now, I will take over and relieve you from your ever hated ironing job (in whisper: I don’t really mean this, I say it just for an effect).

Apart from ironing, I am not sure what I will do after I retire to fill this big hole in my heart and life that NPAFC has occupied for so long. My friends often said I had no life because I spent so much time in the office with the Commission. Well that was my life, the Commission was my life. And I have no regrets, only appreciation for the Commission and its people who were so kind to me. Thank you.
Chan-chan Yaki Recipe

by Mitsuhiro Nagata
Salmon and Freshwater Fisheries Research Institute
Hokkaido Research Organization

There are several possible origins of the term “Chan-chan”, and while no particular one seems more believable than any other, perhaps the most influential origin is that of a quickly grilled dish traditionally cooked by fathers (fathers are sometimes called oto-“chan” in Japanese).

Chan-chan yaki is a teppanyaki-syle of grilled fish (such as salmon) and vegetables. An iron griddle is used to cook the food. In Japan most people use chum salmon because it is the most abundant salmon species, but any salmon is OK. This recipe is flexible and can be easily adapted to personal tastes.

Ingredients

1 or 2 salmon fillets
1-2 sliced onions
half head of cabbage chopped into approximately 2 cm size pieces
3-4 halved or quartered small green peppers
4-5 sliced mushrooms
4-5 tablespoons cooking oil
Miso sauce
100-200g white miso
1-2 tablespoons mirin (sweet cooking rice wine)
1-2 tablespoons sugar
1-2 sliced spring onions
**Mitsuhiro Nagata** was born in Nemuro in eastern Hokkaido, Japan. He enjoyed working part-time on his father’s bottom longline boat during his high school and university days. Back then, many halibut weighing over 100 kg were caught near the Kunashiri and Shikotan Islands before the establishment of the exclusive economic zone. After receiving his Master’s degree in Fisheries at Hokkaido University, Mitsuhiro started work at the Hokkaido Research Organization (formerly the Hokkaido Fish Hatchery) in 1987. He has been involved in research and technology development for sustainable fisheries and management of masu and chum salmon for over 30 years. In 1992 he traveled to the Pacific Biological Station in Nanaimo, BC, as a visiting researcher under the auspices of James Irvine to hone his skills in fish population dynamics. In 2000, Mitsuhiro received a PhD from Hokkaido University based on ecological studies of the dispersal of newly-emerged masu salmon fry. Since 2011, he has been the Director of the Salmon and Freshwater Fisheries Research Institute of the Hokkaido Research Organization in Eniwa. Mitsuhiro gave two presentations at the NPAFC 2015 symposium in Kobe, both on using adaptive salmon hatchery strategies to increase salmon production as ocean conditions change. Mitsuhiro will be retiring from the Institute in spring, 2016.

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**Cooking Method**

1. Heat a large iron griddle on the barbeque and coat the griddle with the cooking oil (*Picture 1*).
2. Place the salmon in the middle of the hot griddle with the skin side up. After browning on one side, turn the fillet over and brown the opposite side (*Picture 2 and 3*).
3. Add the vegetables to the griddle alongside the fish (*Picture 4*).
4. Cover with aluminum foil and steam the fish and vegetables (*Picture 5*).
5. When the fish is nearly done, cover the salmon with the miso sauce and continue to cook until the sauce starts to bubble on the griddle surface. If the griddle is heated on a barbeque, it is probably not be necessary to re-cover the fish with foil to heat the sauce. But if cooked on an indoor stove top, it may be necessary to cover with foil or a lid to retain enough heat to cook the sauce (*Picture 6*).
Profiles of NPAFC Representatives

CARMEL LOWE

Carmel Lowe holds a PhD in Geophysics from Trinity College in Ireland. She is currently the Regional Director of Science for the Pacific Region at Fisheries and Oceans Canada, a position she has held since July 2014. She is responsible for the provision of scientific information and advice needed to inform management decisions regarding aquatic species and their habitats in Canada’s Pacific and western Arctic regions. In addition, she is one of two Canadian delegates on the Governing Council of the North Pacific Marine Science Organization (PICES) and she is the Co-Chairperson of the Pacific Salmon Commission’s Committee on Scientific Co-operation. Prior to joining Fisheries and Ocean Canada, Carmel spent more than 24 years as a Research Scientist and Executive in the Canadian Federal Government where she developed extensive experience in the design, development, management, and delivery of scientific research programs that address Canada’s priorities related to responsible resource development and public safety. Carmel was appointed a Canadian Representative to NPAFC and assumed the position of NPAFC Vice-President in May 2015.

EARL KRYGIER

Earl Krygier received a Masters degree from Oregon State University (OSU) and joined the OSU staff, publishing studies on vertically migrating micro-nekton and nearshore and estuarine species of shrimp and juvenile flatfish. In 1980 he moved to Alaska to work as a salmon fisheries biologist and became the Executive Director of the Alaska Trollers Association (ATA). While at the ATA, he represented the salmon industry in US/Canada Salmon Treaty negotiations and served on the Advisory Committee for the Pacific Salmon Commission. Alaska Department of Fish and Game then hired Earl as the Extended Jurisdiction Program Manager to coordinate the State of Alaska’s marine fisheries resource management with state and federal regulatory and legislative entities. In this position he represented Alaska’s interests at the Pacific Fisheries Management Council, North Pacific Fisheries Management Council, Pacific Halibut Commission, and on the North Pacific Research Board. In addition, Earl represented Alaska in negotiations of the Convention on the Conservation and Management of the Pollock Resources in the Central Bering Sea (Donut Hole) and on the U.S./Russian Intergovernmental Consultative Committee. He has twice served on NOAA’s Saltonstall-Kennedy Grant Panel, a group tasked with recommending projects to the U.S. Department of Commerce Secretary for funding. Seven years ago, Earl founded KEE Biological Consultants, where he works to support sustainable seafood certification of fisheries. He also serves as the Cooperative Research Coordinator for the Marine Conservation Alliance Foundation, an organization promoting conservation and sustainable use of fishery resources through research and public education. Earl was appointed a U.S. Representative to NPAFC in July 2014.

MIKHAIL GLUBOKOVSKY

Mikhail Glubokovsky graduated from Leningrad (St. Petersburg) State University and began his career as a researcher at the Institute of Marine Biology (IMB) at the Far-Eastern Branch of the Russian Academy of Science in Vladivostok, where he later became the IMB Deputy Director. In 1993-2002, he became a Member of the Chamber of Deputies of the Russian Parliament, and during the 2002-2005 period he served as the Vice-Governor of Primorsky Krai. Between 2005 and 2012, Mikhail was a Deputy Director of the Department of Fisheries at the Ministry of Agriculture of the Russian Federation. He is also a Professor at Moscow State University. From 2010 to 2012, he was the First Deputy Director of Federal Research Institute of Fisheries and Oceanography (VNIRO) and has been its Director since 2013. Mikhail was a Russian NPAFC Representative from 2006 to 2009 and again appointed Representative in May 2015.

New NPAFC Secretariat Staff

JENNIFER CHANG

Jennifer Chang is our new hero here at the Secretariat. She joined the staff in April 2015 to provide administrative support and on very short notice rapidly adapted and learned procedures for the immediate run-up for the Annual Meeting. Clearly, her several years of clerical experience in a variety of fields, including immigration, hospitality, and manufacturing are proving to be an asset to her administrative position at the Secretariat. Travelling to the Annual Meeting in Kobe gave her a chance to meet members of the NPAFC community for the first time which was something she appreciated.

Jennifer moved to Canada from Taiwan when she was a child and has been living in Vancouver ever since. In her leisure time, Jennifer enjoys sampling the considerable variety of cuisines Vancouver has to offer. She also likes to cook, travel, and take photos of people, food and places. Jennifer is delighted to join the Secretariat and looks forward to working with everyone in the NPAFC community. The next time you contact the Secretariat, please take a moment and welcome her aboard.
NPAFC Annual Report 2014 includes results of the Commission’s major activities such as the Annual Meeting and other events and now is available on CD-ROM and online at [www.npafc.org](http://www.npafc.org).

**Upcoming Events**

**Joint Patrol Schedule Meeting**
Virtual Meeting
February/March, 2016
[www.npafc.org/new/events_annual.html](http://www.npafc.org/new/events_annual.html)

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Visit the NPAFC website: [www.npafc.org](http://www.npafc.org) for more information on events, publications, scientific documents, and salmon catch statistics.

The Commission encourages submission of ideas, articles, and images on NPAFC-related activities for publication in the newsletter.

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