“Be careful what you wish for” is an old adage that well represents one’s afterthoughts related to a foreign vessel seizure. In September 2011, that thought crossed my mind a few times. Seizure of a foreign fishing vessel, all of its contents and crew, and managing the disposition of each in accordance with applicable United States law, was no simple task. Yet, as the FV Bangun Perkasa is presently being (literally) torn apart at its seams, I still believe that permanently removing illegal, unreported, and unregulated (IUU) vessels from our oceans is a necessary and worthwhile objective.

When the US Coast Guard, District 17 (USCG) notified me in August 2011 that a suspected high seas driftnet (HSDN) vessel was operating within the NPAFC Convention Area, both my agency, NOAA Fisheries Office of Law Enforcement (NOAA OLE), and the USCG had high hopes that we might find enough evidence and an opportunity to catch the Bangun Perkasa. This was a vessel we had seen in prior years, but the pieces hadn’t fallen into place to create an opportunity for its seizure. Numerous press releases and news articles documented District 17’s efforts to chase down and detain the Bangun Perkasa, so I won’t repeat those here (see NPAFC Newsletter No. 31). The lesser known story tells of the long and sometimes arduous process NOAA OLE undertook to manage all aspects of a large, rusty, dilapidated 48.7-meter (160 foot) vessel and its foreign crew. This story is illustrative of successful interagency cooperation, and the logistical and legal challenges a country may face when seizing a foreign IUU fishing vessel.

By mid-September 2011, NOAA OLE’s initial investigation of the driftnet fishing activities of the Bangun Perkasa concluded the vessel had violated United States law prohibiting fishing with a high seas driftnet in excess of 2.5 km in length. Diplomatic communications between the U.S. and the Bangun Perkasa’s claimed home country indicated the vessel was without nationality, and therefore subject to the jurisdiction of the United States. NOAA OLE began preparations to receive custody of the vessel from the USCG at the docks in Dutch Harbor, Alaska. The 22 foreign crew members could not legally enter the United States, so we (NOAA OLE) made plans to work with US Customs and Border Protection (CBP) to maintain custody of the crew until each individual could be repatriated to their home country. These plans included 24-hour security for the vessel and crew, mechanical functioning of the vessel and its refrigeration systems, re-supplying the vessel with food and fresh water as needed, and addressing sanitation concerns until the crew could be transferred out of Dutch Harbor. All this was in addition to the plans required for investigation and disposition of the vessel and its cargo.
As the logistical details started falling into place, I had a fleeting thought that things might go as planned; but that was before the USCG notified us that the vessel had an infestation of *Rattus norvegicus*, otherwise known as the Norway rat. Because Alaska state law prohibits vessels from knowingly or negligently bringing rats into state waters, it was not possible to bring the vessel to port while the rats were on board. Word of the “rat ship” spread faster than the bubonic plague, and we received numerous calls and “creative” offers of assistance from the public to rid the ship of its unwanted and unwelcome live cargo. Ultimately, a rat-eradication plan was developed in consultation with the Alaska Department of Fish and Game, but that plan had to be completed at sea before the vessel could enter state waters, and the crew could not stay on board while rat-attracting lethal snacks and traps were placed throughout the vessel.

This evolution of events meant NOAA OLE would have to remove the crew from the *Bangun Perkasa* at sea, a risky operation even under the best conditions. An entirely new set of logistical requirements emerged as we considered options for retrieving the crew from the *Bangun Perkasa*, housing them, and transporting them out of Dutch Harbor. With no facilities available in the small island community to house 22 foreign crew members, we needed to transfer them immediately to CBP’s holding facility in Anchorage by aircraft. But empty seats on commercial flights to and from Dutch Harbor are a rare commodity, so a chartered flight was the only option to transport the crew and essential government personnel. CBP’s Enforcement Removal Operations unit offered a chartered aircraft—but it would only be available for one day, with just a two-hour window of opportunity for landing and departure from Dutch Harbor due to pilot duty-time restrictions. Alaska Wildlife Troopers offered the Patrol Vessel *Stimson* and its smaller safe boats to rendezvous with the *Bangun Perkasa* and perform the crew transfer. With a brief exemption from the Alaska Department of Fish and Game, the USCG was allowed to bring the *Bangun Perkasa* into Broad Bay for the crew transfer before the rat eradication process began outside of state waters.

Once again, with an abundance of interagency cooperation and assistance, it appeared all was in order to execute our plan. There was still one unpredictable factor that could disrupt everything—weather. If the weather was bad, the plane might not be able to land. Or the seas could be too rough to let the crew transfer safely. Or something could take longer than expected and we might miss our two-hour window for the charter flight. Everything needed to happen according to schedule and according to plan for the operation to be successful. All we could do was hope and pray that good luck and good weather would rule the day.

On October 3, 2011, a team of NOAA OLE personnel, Alaska Wildlife Troopers, and a cadre of CBP officers sailed out of Dutch Harbor aboard the PV *Stimson* into a foggy and drizzling morning. As we awaited word that the charter plane was en route from Anchorage, weather conditions improved somewhat. We began the process of shuttling the crew members, four or five at a time, from the *Bangun Perkasa* to the *Stimson*’s safe boat, and then brought them aboard the *Stimson*. As the
crew transfer was underway, the NOAA OLE case agent and I took a look around the *Bangun Perkasa*. It was as old and dilapidated on the inside as it appeared on the outside. Living conditions aboard the vessel were spartan, cramped, and dirty. In the bunk area, the air was musty and visibly thick with unidentified dust particles. It was hard to imagine living in such conditions for several months at a time, as the crews of foreign vessels engaged in illegal fishing often do.

Once all crew members were aboard the *Stimson*, we set sail for Dutch Harbor, and left the USCG to pilot the *Bangun Perkasa* back out to sea for its rat eradication. At the dock in Dutch Harbor, the crew members were expeditiously transferred to a van for the short drive to the airport and the awaiting chartered aircraft. I breathed an immeasurable sigh of relief when I saw the wheels of the plane leave the runway. The fastest part of the entire seizure, case adjudication, and vessel management process was over.

As soon as the charter plane landed in Anchorage, a team of NOAA OLE special agents and three interpreters that spoke Taiwanese, Chinese, Vietnamese, and Indonesian interviewed the crew members, gathering critical information and evidence. NOAA OLE agents and CBP officers worked around the clock for nearly three days to complete their respective interviews so the crew members could be transported to Seattle in accordance with CBP’s timeline. While the crew members awaited their turn for interviews, they ate pizza and watched TV, seeming to prefer episodes of “Sponge Bob Square Pants” over the sports events CBP personnel had selected for them. The crew members sat in clean, soft chairs. They wore freshly-laundered jumpsuits, and laughed at the TV while eating a warm meal. It occurred to me that they might be enjoying more leisure and comfort than they had known for quite some time.

The interviews of the crew members confirmed how damaging driftnet fishing can be to marine life. At the time the *Bangun Perkasa* was intercepted, it had been fishing for squid, but the crew identified at least 20 bycatch species that were caught in their nets, including tuna, sharks, dolphins, turtles, orca and minke whales, sea lions, and albatross. While many of these species were returned to the sea, crew members said the vast majority were dead.

Once NOAA OLE arrested the vessel, the agency undertook an extensive effort to identify the owner of the vessel by publishing several notices of its seizure in U.S. and foreign newspapers. No final decisions about the disposition of the vessel could be made until the vessel was either claimed by its owners or became the property of the US Government. In the interim, we contracted with Nielsen Beaumont Marine to provide numerous services beyond our expertise, in addition to daily vessel management services. This included refrigeration management services, remediation and disposal of hazardous materials as necessary, security services, survey services, moorage and power services, and offloading of the vessel’s cargo hold. Over 61 metric tons of squid, 0.536 metric tons of miscellaneous finfish (no salmon), and 54 shark carcasses weighing 1.044 metric tons were contained in the ship’s hold. Most of the squid was sold locally for bait because of its questionable safety, but the remaining fish was so degraded that it was destroyed.

In March 2012, the U.S. District Court entered a default judgment against the vessel for illegal fishing, and forfeited the vessel to NOAA. During the prior months, we had contemplated the *Bangun Perkasa*’s future and various options for its disposal. In previous cases, NOAA sold seized vessels, but we found that these vessels were purchased for a low price and often returned to use for committing more illegal fishing activities. We did not want to find a re-named and re-painted *Bangun Perkasa* out fishing unlawfully again, so some form of destruction was the preferred alternative. We considered options consistent with US environmental laws: artificial reef creation and full ship dismantling and recycling. Using the vessel for target practice, as was suggested several times, might have sounded like a cathartic and cost-efficient alternative, but

![The safe boat preparing to receive crew members from the Bangun Perkasa. (NOAA Office of Law Enforcement photo)](image)
was in conflict with environmental laws except under narrowly specified conditions that would have required removal of all hazardous materials. After extensive research into each of the options, artificial reef creation was ruled out because there was no need for this in the Aleutian Islands area. Dismantling and recycling became the preferred alternative, but still we were faced with the challenge of how to accomplish this task when the vessel sat moored to a dock in Dutch Harbor, and as a law enforcement organization, this was hardly our area of expertise. With the work of dedicated NOAA OLE staff, and the assistance of the US Maritime Administration (MARAD), we were able to issue a procurement contract that met all U.S. legal requirements for vessel disposal. The contract went to Magone Marine in Dutch Harbor, and the full dismantling and recycling of the vessel is expected to be completed by the end of July this year. We learned a great deal for future vessel seizures, and hopefully these lessons and mechanisms will be employed next time.

As the NPAFC Contracting Parties begin another HSDN season, the story of the Bangun Perkasa might dissuade the enthusiasm of members for vessel seizures. It shouldn’t. While the Bangun Perkasa received a lot of press coverage and inquiries since its seizure, and not all of it was favorable, every story in the press gave us an opportunity to remind the public how damaging IUU fishing can be, and to send the message that the US Government is willing to follow through and exact the necessary consequences upon violators and/or their vessels. As is often the case, the public may question the use of government resources, or whether the decisions made were the most efficient ones, but in my opinion, this is one of the few ways we can keep reminding the public, and the world, that IUU fishing is a serious problem, and that we will not tolerate it.

The Bangun Perkasa was not alone. There are many other vessels just like it working around the world, around the clock, throughout the year. Imagine the potential environmental impact of a single HSDN vessel, capturing and killing numerous species of fish, sharks, birds, turtles, and marine mammals with each fishing trip. Perhaps our seizure of the Bangun Perkasa was just a drop in the bucket, but every drop makes a ripple, and every ripple makes a difference. And that’s what I hope fisheries enforcement personnel everywhere will continue to focus on.

Author’s Note: The successful prosecution of the Bangun Perkasa case and the vessel’s final destruction was the result of extensive and dedicated action and cooperation by numerous agencies. The USCG was dogged in their determination to capture the vessel and bring the rusty bucket back to Alaska. NOAA OLE special agents, enforcement officers, and administrative personnel tended to all of the operations and details throughout the case. The Alaska Wildlife Troopers provided air transportation, housing for NOAA OLE personnel aboard the Stimson, and their vessels and personnel helped facilitate the crew transfer at sea. CBP officers and the Enforcement Removal Operations team assumed crew management and care, and CBP also provided the chartered aircraft we so desperately needed. Personnel from MARAD were also infinitely helpful in providing their expertise to guide us in the contracting process for the ship’s destruction. Our contractors Nielsen Beaumont Marine also provided outstanding service. This entire process was a team effort from beginning to end, and I am deeply appreciative of everyone’s efforts to bring the case to a truly successful conclusion.

Sherrie Tinsley Myers retired as the Special Agent in Charge, NOAA Fisheries Office of Law Enforcement (NOAA OLE), Alaska Division, in December 2012. She served over 27 years in Federal law enforcement. Her career focus was natural resources enforcement, and she served with the National Park Service, U.S. Park Police, U.S. Forest Service, and NOAA OLE. During her tenure with NOAA OLE, she represented the agency at numerous NPAFC meetings. She is enjoying the benefits of retirement and spending more time with her family, but remains committed to natural resource conservation. She is completing her Master's degree in Administration of Justice, and hopes to teach and write in support of conservation law enforcement. She can be reached at STMyers@acsalaska.net.
The 2013 ENFO meeting was held March 26-27, 2013, in Vancouver, Canada. All the Commission’s member countries were in attendance. Unlike previous years, this year’s ENFO meeting was convened in the spring as the first step in the process of shifting the Commission’s Annual Meetings over to the springtime in 2014. Unfortunately, our chairperson, Mr. Jeongseok Park, couldn’t attend the meeting, and the Republic of Korea Government appointed me as acting chairperson for this meeting. At the meeting, participants discussed various enforcement activity matters.

Member countries informed the group about last year’s enforcement activities and planned actions for the upcoming season. Japan reported last year there were aircraft and surface patrols, and that two Fisheries Agency of Japan (FAJ) fisheries supervisors were authorized to board a Canadian Department of Fisheries and Oceans (DFO) air patrol, CP-140. Japan will continue their aircraft and surface patrols in 2013.

In previous years, Korea did not have any enforcement activity in the NPAFC Convention Area, but this year they tentatively plan to patrol this area for the first time. Russia is planning the same level of vessel and aircraft patrols in the Convention Area this year as they used last year.

The United States engaged in a high level of coordination with the other member countries and described the high-seas driftnet (HSDN) case involving the F/V Da Cheng. The Chinese government assumed responsibility and jurisdiction of the vessel, which was sold at auction and destroyed in January 2013. The United States plans to use ship and aircraft patrols in the Convention Area and will continue to issue Local Notices to Mariners prior to and during the high threat season to enlist the help of citizens in providing information on potentially suspicious behavior. Since the last meeting, Canada has updated its Radarsat-2 images in the enforcement database. For 2013 Canada has scheduled for the use of long-range aircraft patrols and Radarsat-2. In 2012 Canadian aircraft were staged and deployed from Japan, and they hope to do so again in 2013. Deployment from Japan dramatically improved the patrol coverage efficiency in the Convention Area, and Japan has expressed her willingness to cooperate after studying the plan.

The United States also made a presentation on the 2013 IUU threat assessment and Marc Trudel of Canada presented scientific information relevant to planning the upcoming patrol season. The member countries appreciated both presentations, which were followed by useful question and answer periods.
The committee reviewed the List of Actions on the Prioritized Recommendations from the NPAFC Performance Review Report. One of these actions includes ENFO’s revision of its terms of reference. A draft revised terms of reference was considered at the 2012 Annual Meeting, and afterwards Korea made comments and the United States created a new draft considering those comments. At the 2013 ENFO meeting, the members reviewed and discussed the draft terms of reference in its entirety. After lengthy discussion, all countries agreed to the draft, which will be sent to the Commission for adoption.

On another topic, the committee discussed the necessity of holding a separate face-to-face Enforcement Evaluation and Coordination Meeting (EECM) in early spring, 2014. All members agreed the face-to-face meeting of ENFO at the Annual Meeting in May 2014 would suffice to discuss enforcement planning, and a virtual meeting in March could be used to coordinate and develop patrol schemes.

Following adjournment of the ENFO meeting, participants went on an excursion. Everyone enjoyed an afternoon cruise in Vancouver harbor and a tour of the Canadian Fishing Company cannery. After the excursion, the Secretariat held an Open House at their offices in downtown Vancouver. All the participants came together for informal discussions and had a great time.
Warm Breezes and Winds of Change—The view from the Chair

By Mark Saunders
CSRS Chairperson

The past eight months have been a whirlwind for the Committee on Scientific Research and Statistics (CSRS). It seems that soon after wrapping up the meeting last fall in St. Petersburg, we found ourselves in Honolulu in April on our revised spring meeting schedule. And while the tropical setting was certainly a welcome one, it was productive as well. The CSRS meeting and our 3rd juvenile salmon workshop were extremely successful. A huge thank you to the Secretariat staff that did such a professional job on all of the arrangements—from poster sessions to hula lessons!! Thanks to Nancy Davis whose organizational skills and hard work drive the CSRS bus. Thank you also to our interpreters who did such a great job.

In terms of the CSRS meeting itself, I was particularly pleased with the panel sessions we convened to discuss progress on our Science Plan themes. As most of you know, the CSRS is working to strengthen its planning and performance measurement. Documenting our progress is needed to inform the direction we will take in our new science plan. It was exactly the kind of science discussion we have been working towards in streamlining our agendas, and it was certainly the best use of the valuable time we had with language interpretation.

A number of points stood out in the discussion:

• The accomplishments of the BASIS Working Group are very impressive. I believe this may be one of largest and most successful fisheries oceanographic investigations conducted to date. Their work has been significant not only in terms of the scientific knowledge generated, but also because it provides information that directly informs fisheries management.

• While improving our understanding of winter survival continues to be challenged by the difficulty of winter sampling, good progress has been made in localized studies.

• In terms of monitoring, we are doing a good job of tracking catches in the North Pacific, but gaps remain in our ability to collate escapement and productivity information.

• Stock identification techniques have made great strides, and the cooperation of our member nations in collecting samples and developing baselines has been excellent. The discussions of potential improvements in stock identification technology were fascinating, and clearly we need to work together in this area.
The juvenile salmon workshop showcased the huge amount of progress that has been made in the last decade. I am looking forward to the release of the summary report later this fall. Thank you to the organizing committee, presenters, and session chairs.

As we look to the future, I want to acknowledge the end of an era. As I write this, Vladimir Fedorenko and Vladimir Radchenko are working together in Vancouver to smooth the transition from Vladimir Fedorenko’s retirement to the beginning of Vladimir Radchenko’s term as Executive Director of NP AFC. Recently I was able to attend the warm, fun, and emotional send-off dinner for Vladimir Fedorenko that was held at the Vancouver Rowing Club. All of us were able to reflect upon and celebrate what has been a remarkable career. Thank you to Vladimir for his strong leadership and the legacy he leaves behind at NP AFC.

While it’s sad to say goodbye to Vladimir Fedorenko, I welcome Vladimir Radchenko and look forward to working with him. His strong scientific credentials and enthusiastic leadership style are an excellent fit for the CSRS and the challenges and opportunities we are facing.

Through the summer and fall a variety of activities will occupy the CSRS. A large number of us will attend the PICES annual meeting in Nanaimo in October, where we will engage the PICES members in discussions aimed at creating a framework for enhanced collaboration between the two organizations. Our Science Sub-Committee will begin email deliberations on the development of the new Science Plan and the 2015 science symposium, and our Stock Assessment Working Group will examine (also by email) approaches to escapement monitoring and the study of hatchery/wild fish interactions.

Smooth sailing to those of you spending the summer in the field, and I hope everyone has an opportunity to enjoy the good weather with your families.
NPAFC convened the “Third International Workshop on Migration and Survival Mechanisms of Juvenile Salmon and Steelhead in Ocean Ecosystems” on April 25-26, 2013, in Honolulu, Hawaii, for researchers to share and review new information. More than 95 participants from North Pacific Rim countries attended. Thirty-four oral presentations, including invited reviews on juvenile salmon research in the eastern and western Pacific, and 40 posters were presented. William Heard gave the wrap-up presentation at the conclusion of the workshop (see next page). Thank you to all who contributed to the success of the workshop. Oral and poster presentations given at the workshop are currently available online. Extended abstracts will be compiled in Technical Report 9, which will be available online in late autumn, 2013.
Wrap-Up Presentation Given at the Conclusion of the Workshop

I think it is only fitting to start this wrap-up session by first expressing gratitude and thanks to each of the presenters, both oral and poster, for the wide range of excellent presentations focused on migrations and survival mechanisms of juvenile salmon and steelhead in ocean ecosystems. Such presentations are not easy, and what sometimes seems a thankless task involving long hours, weeks, months, even years of research, analysis, and focused effort is needed to make such good presentations. I think it is appropriate that we extend our sincere thanks to all those who have worked so long and hard to make this workshop a success.

This is the third NPAFC workshop on juvenile salmon, and the first to include a focus on steelhead. The first workshop held in Tokyo in 2000 was followed by an in-depth research review of the early marine period of Pacific salmon by Canada, Japan, Russia, and the United States, which was published in 2003 as NPAFC Bulletin 3. The second workshop on juvenile salmon was held in 2006 in Sapporo. And, given the amount of research completed since then, the timing of this workshop is very appropriate as evidenced by the breadth of significant new information we have heard over the past two days. While it is impossible for me to cover all the new findings and insights presented at this workshop, not to mention new insights into some older concepts, I will try to summarize some salient issues covered by keynote presentations from Asia and North America, and touch on a few key ideas covered under the six workshop topics.

Review of Asian Juvenile Salmon Studies
My head is still spinning over the extent of information Vladimir Radchenko presented about new Asian research on juvenile salmon. Among other things, he reviewed Russian trawl surveys that described concentrations and migration patterns of juveniles for many stock groups of Asian salmon in the Okhotsk and Bering seas. Those surveys were especially effective for Asian pink salmon stocks by providing a strong basis for making annual forecasts of adult returns to Kamchatka and Sakhalin rivers. Russian surveys in winter and early spring have expanded our knowledge of juvenile and immature salmon biology during these periods, and additional surveys in late spring and summer have provided data for differentiation of stock groups and forecasting updates. Increased abundance of pink salmon from eastern Kamchatka has not changed the role of salmon in the trophic structure of epipelagic nekton communities in the western Bering Sea. Some changes in prey were noted in years of high salmon abundance, but this did not influence growth and survival of juvenile salmon. The food supply for juvenile salmon and micronekton in waters of far-eastern seas and the northwestern Pacific is much higher than the total food consumed by all epipelagic nekton. Food resources consumed by juvenile salmon represent a minor part (1-2%) of the total macrozooplankton biomass.

I sense that our Russian colleagues, based on their research in the western Pacific involving extensive year-round ocean surveys documenting high standing crops of macrozooplankton and other micronekton foods of salmon, pretty much hold in abeyance any current concerns about carrying capacity of salmon in these waters. This doesn’t mean, however, it can’t change in the future.
Review of North American Juvenile Salmon Studies
Marc Trudel’s survey of North American research since the 2006 workshop indicated that Chinook and coho salmon have received the most attention. This also turns out to be true for many North American presentations and posters at this workshop, a reflection of increasing concern over population and stock declines of these species over broad geographic regions, including Alaska. Marc reported progress in understanding stock-specific migration behavior of juveniles, and showed how DNA analyses, tags, and biophysical attributes provide tools for studying ocean distribution and behavior. In British Columbia, the role of sea lice parasites transferred from salmon farms to wild fish has received much attention as potential mortality agents on juvenile salmon. Unlike the western Pacific, few studies have been conducted in the eastern Pacific during winter periods. This leaves a huge gap in our understanding of North American salmon ecology during this critical life history period.

Topic 1: Seasonal Distribution and Migration Route/Timing
An important and continuing theme under this topic was the application of multiple technologies identifying stock-specific migratory patterns in juvenile salmon. Two Japanese papers using otolith marks and single nucleotide polymorphism markers documented dispersal and migration patterns of specific stocks of chum salmon on the Pacific coast of Hokkaido. North American scientists using variations of 14 DNA microsatellites followed individual Fraser River and central British Columbia (BC) sockeye salmon stocks migrating out of BC and tracked them northwestward throughout much of Gulf of Alaska. Russian scientists identified mixed-stock aggregations of 24 Okhotsk Sea even-year pink salmon stocks using restriction fragment length polymorphism analysis and found by September most juveniles originating from the southern part of the basin had migrated into the northern Okhotsk Sea. Otolith microstructure was used in another Russian study to identify mixed stock groups of Okhotsk Sea pink and chum salmon.

Migration behavior was another important theme. In the northern Bering Sea, juvenile Chinook salmon from western Alaska rivers migrated in opposite directions along the coast during a series of warm and cold years, affecting survival. Late migration timing and ocean entry were shown to have significant beneficial effects on populations of Fraser River Chinook and sockeye salmon. And a study on persistent age-specific homing and return timing of Columbia River Chinook salmon provided a basis for inferring different ocean distribution patterns in age groups of fish.

Related to homing behavior was the first empirical evidence of geomagnetic imprinting in any animal determined from analyzing divergences in geomagnetic field drift at the mouth of Fraser River. Geomagnetic imprinting could account for the two different entry routes of returning sockeye salmon migrating around Vancouver Island.
Topic 2: Hydrological Characteristics, Primary Production, and Prey Resources
In the Strait of Georgia, survival of hatchery coho salmon has decreased from 8-10% to 1% over a 30-year period, leading to new research focused on staggered smolt release dates along with plankton monitoring to assess food quality and availability. The study also has a fish health component to test if a marine bacterium is affecting survival. Increased primary and secondary production indicated favorable conditions for juvenile salmon.

In the northern California Current, a study on spatial associations from shipboard acoustic surveys of distribution and abundance of krill, satellite-derived indices of Chlorophyll-a, and occurrences of juvenile Chinook salmon showed persistent high krill and salmon abundance associated with Chlorophyll-a hot spots.

A study conducted along the Gulf of Alaska coast demonstrated juvenile salmon migrating through the perimeter of the Sitka Eddy have increased foraging opportunities and elevated growth rates that could mitigate for increased competition in years with high salmon abundance.

Topic 3: Trophic Linkages, Growth Rates, and Predation Rates
A California Current study demonstrated a strong positive relationship between growth and survival in coho salmon during the first summer at sea with little mortality occurring during the following winter period.

Researchers conducting a study along coastal British Columbia reported stock-specific predation on juvenile salmon by rhinoceros auklets at different nesting colonies, indicating there are important spatial-temporal salmon migration patterns. Concurrent coast-wide trawl surveys for juvenile salmon supplied evidence for size-selective predation, as the salmon consumed at each auklet colony were smaller than salmon caught in the surveys.

To better understand coast-wide declines in Chinook salmon, a continental-scale analysis of juvenile salmon feeding ecology from northern California to the eastern Bering and Chukchi seas found large gradients in carbon isotopic data corresponding to regional variations in zooplankton and forage fish in diets, especially in smaller Chinook salmon up to 200 mm in body length.

A presentation described results by utilizing a food supply index to examine relationships among biomass of nekton species, zooplankton, and juvenile salmon in the western Bering and Okhotsk seas. Diets changed somewhat during years of high salmon abundance, but there were no strong negative consequences for juvenile salmon in those years.

Topic 4: Ecological Interactions Among Species and Populations
A Southeast Alaska study examined interactions between pink and chum salmon and suggested high brood-line returns of adult pink salmon influenced feeding and growth of juvenile chum salmon.

To investigate the possibility that cannibalism by returning adult pink salmon contributes to brood-line oscillations in pink salmon abundance, a study in Southeast Alaska and Prince William Sound examined adult pink salmon predation on juvenile pink salmon and herring. Results indicated that over the 16-year data set, cannibalism rarely occurred, i.e., in less than 1.1% of more than 2000 adult pink salmon stomachs analyzed. I note, however, that Vladimir Radchenko showed an interesting photo of an adult pink with a large number of juvenile pink salmon in its stomach.
A study conducted in Puget Sound found likely competition between juvenile salmon and Pacific herring due to similarities in their diets and to greater population biomass of herring.

**Topic 5: Survival Rate and Survival Mechanisms**

Researchers conducting a Strait of Georgia study reported that years of poor ocean productivity and biological stressors, such as harmful algal blooms and pathogens, may weaken the immune systems of juvenile salmon, which is associated with higher levels of mortality.

An analysis of high-seas food habits revealed salmon and steelhead consume a variety of types and forms of plastic debris. The study explored potential mechanisms of marine mortality due to ingestion of plastic debris and emphasized the need for field and laboratory process studies on this issue.

Two separate modeling studies considered the influence of large-scale climatic patterns such as the Pacific Decadal Oscillation and North Pacific Gyre Oscillation on survival rates of Pacific Northwest coho salmon. Both studies found large-scale events have strong influence on physical and biological components of ecosystems, but effects are more uncertain at local and regional levels. For example, in one case spatial comparisons of large scale events and ocean sea surface temperatures were better predictors for survival of coastal populations than temperatures inside Puget Sound.

Two other studies took a salmon life-history perspective. The life-history of Southeast Alaskan juvenile coho salmon “nomads” was highlighted as providing substantial life history diversification for efficient use of discontinuous freshwater habitats and a population buffer against survival shocks. The nomad coho salmon life history is one where pre-smolts rear in estuaries and return to natal or non-natal streams to overwinter before smolting in the spring and migrating to the ocean. Another presentation examined critical periods in the marine life history of Pacific salmon and argued for the need to consider all phases of the life history rather than focusing on the assumption that one “critical” period is of overriding importance.

In a study examining fish scales of out-migrating smolts and returning adult Bristol Bay sockeye salmon, authors concluded size-selected mortality was dependent on ocean conditions and biological characteristics of the smolts and that productivity of these stocks was largely dependent on the degree of size-selective ocean mortality.

In a Gulf of Alaska study, mesoscale eddies were shown to be drivers of stable carbon isotopes in oceanic copepods and it appears these eddies can account for some of the interannual variability of Prince William Sound pink salmon survival.

Another presentation suggested that increased competition at sea, in part related to continued release of large numbers of hatchery salmon (pink and chum), may have played a significant role in reduced BC sockeye salmon survival since 1991.
Theme 6: Survival and Salmonid Ecology during the First Winter at Sea

Russian studies on the food supply of pink salmon during winter and spring of 2009-2011 in the upper epipelagic layer of the western Subarctic frontal zone estimated the total biomass of nekton along with the consumption of various zooplankton groups by pink salmon and other organisms. Estimates showed that consumption of zooplankton by pink salmon and all nekton was a minor fraction of the available food in the upper epipelagic zone. Feeding by pink salmon during winter and spring was not low, as was previously reported.

In summary, from my perspective these were some of the highlights of the workshop:

- Major new and continuing improvements in discerning stock-specific migration routes of juvenile salmon based on genetic stock identification techniques, otolith microstructure, otolith marking, and other stock identification technologies.

- Growing evidence regarding the importance of early marine growth in juvenile salmon and the significance of size-selective mortality in marine life stages as a key determinate of overall survival and a cornerstone of the critical size hypothesis. We even learned that rhinoceros auklets can be added to the list of juvenile salmon predators, and the birds seem to target the smaller fish. Looking at this from the salmon’s point of view, I guess we might summarize this whole concept as “getting bigger quicker is better”.

- Possible mismatch of juvenile salmon migration timing and production of suitable marine prey resources from changes in freshwater and marine environments due to global warming and differential climatic effects.

- New insights into salmon homing migratory behavior based on empirical evidence of geomagnetic imprinting.

- Potential deleterious impacts of marine debris on salmon ecology and survival.

In closing, I would like to add a comment regarding a future research direction involving Pacific salmon. Because we are in a period of fairly rapid climatic changes, it is important for us to collectively do whatever we can to maintain important long-term data sets, marine surveys, and long-standing observations that give us critical tools to help us better understand what is going on. I know this is tough in times of budget shortfalls and sequesters, but we must persevere and strive to keep the need for these valuable long-term data sets front and center in the minds of administrators and others.

I thank you for your attention and apologize for the many subjects and issues from both oral and poster presentations I was unable to touch on during this wrap-up.

William (Bill) Heard recently retired after many years at NOAA’s Alaska Fisheries Science Center, Auke Bay Laboratories in Juneau, Alaska, where he retains a “Quasi-Emeritus” status. During his career, he supervised research on early marine ecology of salmon, stock enhancement, hatchery-wild interactions, and long-term monitoring of biophysical parameters affecting salmon. Bill has served on numerous technical committees for Alaska and for international organizations, including NPAFC. He has received awards from the State of Alaska, American Fisheries Society, U.S. Department of Commerce, and the NOAA Fisheries Distinguished Career Award. During his free time, Bill enjoys salmon and halibut fishing in the pristine waters around his home in Auke Bay.
Vladimir Fedorenko retires as executive director

After more than a 20-year involvement with NPAFC, Vladimir Fedorenko retired on June 30, 2013. Over his 43-year career in diplomacy and fisheries economic relations, he and his wife have spent more than half of that time residing in North America. Prior to his position as Executive Director at NPAFC, previous appointments took him and his family to live in Magadan and Moscow, Russia; Washington DC, USA; Halifax, Nova Scotia, Canada; and finally to Vancouver. His association with NPAFC began by representing the Soviet Union in Convention negotiations (1990-1991) and continued as a Russian Representative (1992-1999). In 1999 he became Executive Director of NPAFC.

During his tenure, Vladimir has fostered an environment of close and effective cooperation among the member countries of NPAFC. This has included leadership and support for developing formal and informal modes of communications among those at high levels as well as operational personnel. The trust and cooperation nurtured under Vladimir’s tenure has increased efficiency of high-seas enforcement practices for prevention and elimination of illegal driftnet fishing for salmon and steelhead in the Convention Area. With Vladimir’s guidance and support, scientists have developed effective methods for cooperation in the collection and exchange of samples and personnel. Vladimir has also worked to find ways to ease the exchange of scientific information for the benefit of ocean salmon and steelhead trout conservation.

In 2003, Vladimir guided the expansion of NPAFC with addition of the Republic of Korea as the fifth member of the Commission. In recent years, he has helped NPAFC institute many of the recommendations brought forward by the Commission’s performance review, and he leaves the Commission in a safe and secure financial condition. In retirement, Vladimir will enjoy traveling and spending time with his wife, children, and grandchildren. Congratulations Vladimir and Galina and Bon Voyage!
Vladimir Radchenko Arrives as the New Executive Director

Vladimir Radchenko, an internationally-known scientist and expert on salmon and nekton communities of the North Pacific Ocean, assumed the executive directorship of NPAFC on July 1, 2013. He was born in a small Ukrainian town and as a child spent his summer vacations along the Black and Azov seacoasts. Motivated by the unlimited expanse and variable nature of the marine environment, he studied biology at Kharkov State University where he examined the planktonic young of bivalves and barnacles.

While on a biological expedition to Russia’s far-eastern seas to collect samples for the university museum, Vladimir witnessed the wealth of marine life that governed his choice for a vocation. He started working as a fish and oceanographic researcher aboard the Pacific research vessel fleet based in Vladivostok and participated in dozens of scientific expeditions, including surveys of the subarctic North Pacific. The turning point for Vladimir came in 1987 when he joined the Bering Sea expedition led by Professor Vyacheslav Shuntov, an internationally recognized marine ecologist (2012 recipient of the NPAFC Award, see Newsletter No. 33), and learned first-hand about the ecosystem approach to studies of marine life and resource management.

In 1989-2000, Vladimir worked as researcher, head of laboratory, and deputy director in the Pacific Scientific Research Fisheries Center (TINRO-Center, Vladivostok), where he continued his investigations of marine biology, ichthyology, fish ecology, salmon stock dynamics, and fisheries management. In 1994, he defended his PhD dissertation, “Composition, structure, and dynamics of nekton communities of the Bering Sea epipelagic layer”.

During his career, Vladimir has held several senior administrative positions at Russian fishery research institutes and the Federal Agency on Fisheries, including Director and Principal Scientist of the Sakhalin Scientific Research Institute of Fisheries and Oceanography (SakhNIRO) in Yuzhno-Sakhalinsk (2001-2010), Deputy Head of Science and Education Department in Moscow (2010-2011), and most recently as Deputy Director General of TINRO-Center in Vladivostok.

Vladimir’s experience working with inter-governmental organizations has included scientific and administrative leadership as a Russian delegate and in work on advisory panels, committees, and working groups of PICES (1995-2012), ICES (2010-2012) and NPAFC (1996-2005, 2012). His NPAFC involvement began in 1996, when he was invited to present an historical overview at the organization’s first scientific symposium. In 2005-2007 he co-chaired the steering committee of the NPAFC symposium on salmon stock status and co-edited NPAFC Bulletin 4. Since then, Vladimir has been invited to present his views at many NPAFC scientific meetings.

Vladimir looks forward to settling into life in Vancouver and bringing his perspectives and leadership skills to NPAFC. He is married and has two children, and hopes to hone his snow-boarding skills on the runs in North Vancouver. Welcome Vladimir and Svetlana!
For the last seventeen months, I have been living in Vancouver where I have had a very great and wonderful time. I think it has been one of the happiest periods in my life. Before arriving in Vancouver, I was nervous and worried about my training period at NPAFC. Before I left Korea, Jeongseok Park told me the Secretariat staff was very good and I didn’t need to be nervous, but I was anyway.

During my training period, I had various experiences. I joined conference call meetings for enforcement activities, and I arranged the documents on apprehended vessels in the NPAFC Convention Area. At the 2013 meeting of the Committee on Enforcement, I assumed the role of acting chairperson because of the absence of Jeongseok Park, the ENFO Chairperson (see article, this issue). This was a very useful and helpful experience, and it will serve me well in the future for carrying out various tasks for the Korean Government.

Because I participated in several NPAFC meetings, I had the opportunity to visit many interesting places. The 2012 Annual Meeting in St. Petersburg was my first time visiting Russia, and St. Petersburg was an impressive city. Although the meeting times are always incredibly busy for the Secretariat, there were some opportunities to enjoy St. Petersburg with the staff. I particularly enjoyed tasting many dishes of delicious Russian food, and the city’s architecture was gorgeous. Last April, before and after providing support for the Committee on Scientific Research and Statistics meeting and the Juvenile Salmon Workshop (see article, this issue) in Hawaii, I was able to take a rest and enjoy the lovely environment of Honolulu and its surroundings.

Everyone was very kind and helpful to me, and Jeongseok Park was right; there was no need to be nervous. Vladimir was a great boss for me. He was very warm and reasonable, and he made the office cozy with some jokes. Wakako was very enthusiastic and experienced, and she always brightened-up the office mood. Nancy was a scientific specialist, helped me improve my English writing, and taught me about salmon and science. And Claudia always did all her work in the office with a smiling face.

Besides working in the NPAFC office, life in Vancouver was full of joy. The beautiful physical surroundings and nature gave me peace and composure. I went on many trips to cities and parks of North America, and my family increased by one, when my wife and I had a son born in May!

Training at NPAFC will be a useful asset for my continuing career with the Korean Government. I thank the Commission for giving me an opportunity to work at NPAFC, and I’ll always miss working there and living in Vancouver. In the future, I hope I’ll take charge of NPAFC-related responsibilities at the Korean Government and have many chances to see my NPAFC family again.
The term “acqua pazza” literally means “crazy water” in Italian and usually refers to poaching fish in an herbed broth. The following recipe and photos were provided by Toshihiko Saito from the Hokkaido National Fisheries Research Institute. Sand in the clams can be removed by placing them in a bowl with a ~3% saltwater solution for 1 to 3 hours in the dark (covering the bowl with newspaper is sufficient). Toshihiko usually uses masu salmon because of the convenient fillet size, but any salmon species is OK.

**Ingredients**

- 500-700 g salmon filet
- 1 teaspoon (approx.) salt
- 2 tablespoons olive oil (1 tablespoon for browning the fish and one added to the dish at the end for flavor)
- 200-300 g fresh clams cleaned of sand and debris
- 10-12 cherry tomatoes
- 10-15 pitted black olives
- 1 clove garlic, minced
- 150-180 ml water and/or white wine
to taste

**Method**

1. Remove fish scales from the salmon fillet and make shallow cut(s) into the skin side of the fillet. Blot excess water from the fillet.
2. Sprinkle salt over both sides of the fillet and let it stand for 15 minutes at room temperature. Remove excess water and salt from the fillet.
3. Add 1 tablespoon of olive oil to a frying pan and brown the fillet on medium heat.
4. After browning one side, turn over and brown the opposite side.
5. Add clams, cherry tomatoes, black olives, and minced garlic into the empty space of frying pan, and pour in the water (or water and white wine mixture).
6. Cover the frying pan and turn up to a high heat until steam is produced.
7. Once the contents are steaming, reduce the heat to medium and steam for another 2-3 minutes.
8. Taste the broth; add salt, if necessary.
9. Turn off the heat, and let it simmer covered for about 5 minutes.
10. Remove the cover and sprinkle minced Italian parsley and 1 tablespoon of olive oil.
11. Bon appétit!

_Toshihiko (Toshi) Saito_ has had a unique career in fishery science. After graduation from Hokkaido University, he joined the Japan Overseas Cooperation Volunteers program and worked in Morocco, 1993-1994. While in Morocco, Toshi worked with local colleagues at a national institute on ways to improve enhancement of rainbow trout, brown trout, and northern pike. After completion of the overseas program, he returned to Hokkaido University to obtain an MSc. In 1999 he joined the staff of the National Salmon Resources Center (NASREC) in Sapporo. Since the merger of NASREC with the Hokkaido National Fisheries Research Institute in 2011, he has led the Stock Assessment Group in the Salmon Resources Division. Toshi’s scientific interests focus on salmon stock assessment and variability in relation to oceanic conditions and was the subject of his PhD at Hiroshima University, which he completed in 2009. For the past several years, Toshi has contributed his expertise to the Committee on Scientific Research and Statistics and to the Working Group on Stock Assessment at NPAFC. Toshi loves fishing, and since last year he has been perfecting his small boat fishing skills in Lake Shikotsu, near Sapporo. He enjoys trying to out-wit the kokanee, white-spotted charr, and brown trout, but hasn’t caught the big one, yet.
Are you interested, or know someone interested in an internship at NPAFC? Applications are being accepted for the NPAFC internship located at the Secretariat’s office in Vancouver, BC, Canada. Internship projects may include preparation of information and support for scientific projects related to conservation of anadromous stocks, and/or high seas fisheries enforcement; organizing and editing various outreach materials; and general support for the Secretariat. One intern per year will be accepted. The duration of the internship is for a period up to six months, starting on or about September 1, 2014.

Requirements:
- Must be a citizen of one of the NPAFC member countries (Canada, Japan, Republic of Korea, Russia, United States) and involved in the academic or government sector of one of the member countries.
- Must have a minimum of a university degree; be able to read, write, and speak English; be computer-, internet-, and web-literate; and interested in the mission of NPAFC.

For details, please contact the Secretariat. Application Deadline: March 1, 2014

Technical Report 9
This report will be an online publication that is a compilation of extended abstracts submitted to the NPAFC Third International Workshop on “Migration and Survival Mechanisms of Juvenile Salmon and Steelhead in Ocean Ecosystems”, held in Honolulu, HI, USA in 2013. Technical Report 9 is scheduled to be published in late Fall 2013.

NPAFC 2012 Annual Report is available on CD-ROM and online from the NPAFC website. The Annual Report includes major discussions that took place at intercessional meetings and the 20th Annual Meeting of the Commission in St. Petersburg, Russia.

NPAFC 2013 Finance and Administration (F&A) Meeting
Meeting will be conducted by email in September.

NPAFC 2013 21st Annual Meeting
Meeting will be conducted by email in November.