April 2016

To My Salmon Fishing Friends:

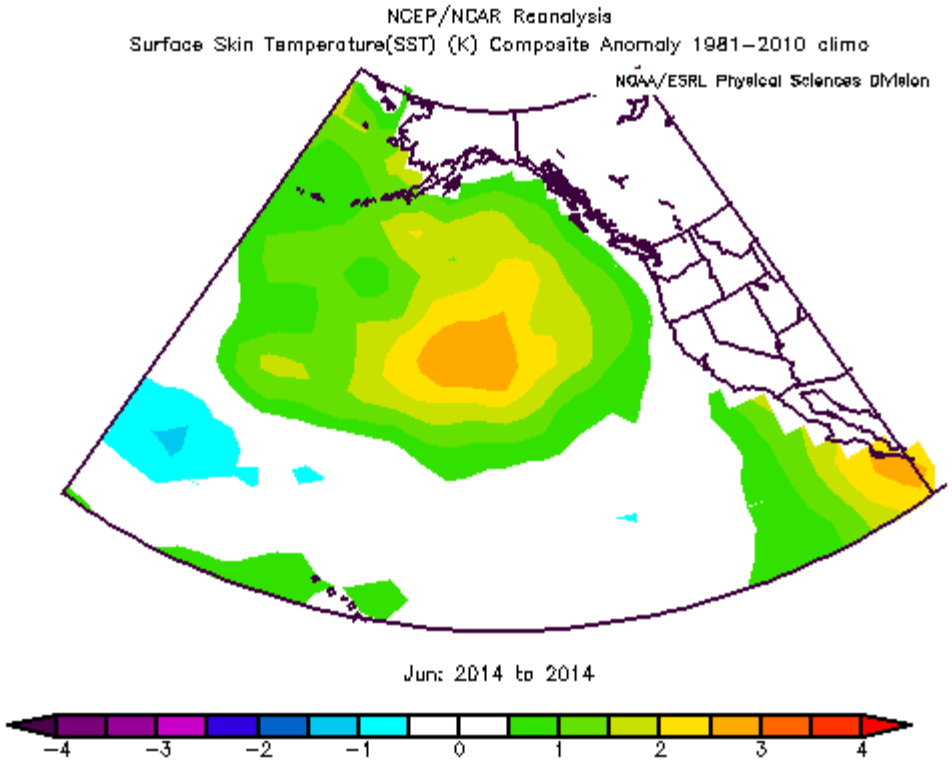
This is the time of year when I go through my journals carefully and try to make sense of the last season.

Summary

The 2015 fishing season was better than I expected despite the very warm water. The 2011 and 2012 chinook cohorts had high survival. Coho were poor. The run of big chinook in early August was quite good.

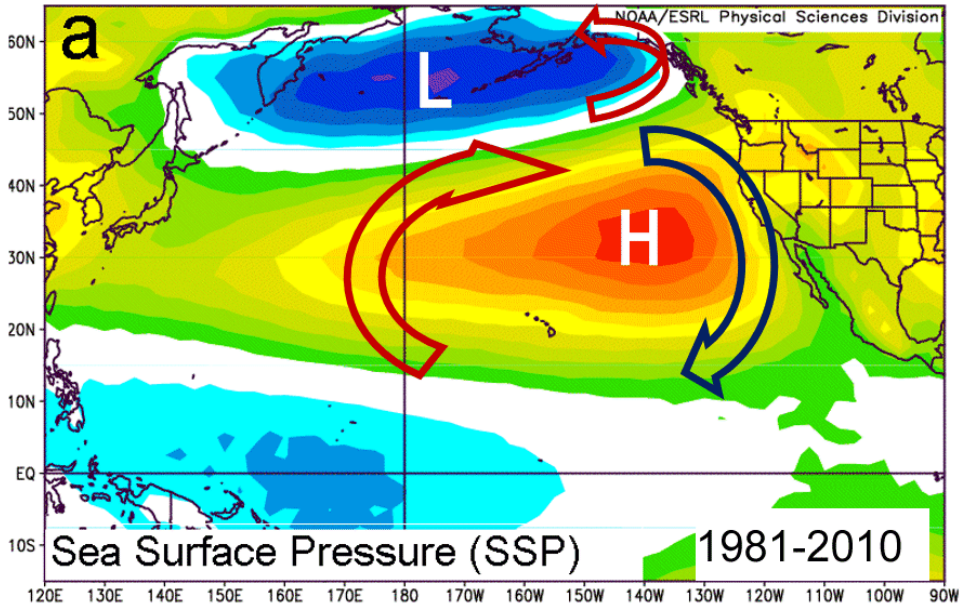
"The Blob"

First a bit of history. After a series of summers with cool ocean temperatures (2007 through 2012) the Gulf of Alaska surface waters began to warm in 2013, with the most extreme warming arriving in early 2014 as shown in the figure below (white represents normal sea surface temperatures).



This warm water was quickly labelled “the blob” by oceanographers and was easily the warmest temperature anomaly ever observed in the region. Later in the summer it reached 4°C above normal and the warm water persisted through the winter and into 2015.

The figure below shows air pressure at sea level in the North Pacific averaged over a thirty year period. The arrows show the counter clockwise wind direction around the Aleutian Low and the clockwise wind direction around the Pacific High. The red arrows represent warm air flow from the south while the blue arrow represents cold air flowing from the north.



The Aleutian Low deepens and expands in area in winter, bringing warm winds and ocean waters from the south toward the B.C. coast. The Pacific High expands and increases in pressure in summer, bringing somewhat cool winds from the northwest to the southern B.C. coast and the US west coast south to Mexico. Accompanying these northwest summer winds are cool upwelled waters along the coast.

In general, warm waters lie under the Pacific High and cool waters under the Aleutian Low. In late 2013 the Pacific High pushed far to the north of its normal position, and the relatively calm sunny conditions under this anomaly gave rise to the warm blob. This warming was accelerated by an inflow of warm surface water from the south. The Pacific High formed a ridge which blocked winter storms from reaching the California coast, causing a severe drought. This blocking action also allowed cold polar air to enter North America from northern Alberta causing a very severe winter in the midwest and on the east coast (the “polar vortex”).

California is normally dry during the summer and receives its rain and snow in the Sierra Nevada mountains during the winter, due to the north/south seasonal movement of the Pacific High. During the winter of 2013/2014 the Pacific High remained far to the north (the “ridiculously resilient ridge”) blocking storms from the Gulf of Alaska from reaching the coast. In mid ocean the summer sun heats the surface layer of water and the top 100 meters becomes stratified. Winter storms mix this surface layer

with deeper water, bringing cold nutrient rich water to the surface and stimulating the spring plankton bloom. From 1998 through 2011 the winter winds in the North Pacific had higher than normal wind speeds and the surface layer was thoroughly mixed. Then during the winter of 2013/2014 the wind speed was lower than any year since 1995 and very little mixing took place, leaving the warm surface water in place. The lack of nutrients meant less feed, slower growth and high mortality for the salmon.

The water at depth has higher salinity (and greater density) than the surface water, so once the surface layer becomes stratified considerable energy is required to mix it. The absence of big storms and high winds during the winter of 2013/2014 allowed the stratification to remain in place through the spring of 2014 and resulted in even greater warming and stratification during the summer of 2014. This combination of hot, low salinity water at the surface laying on top of cold, high salinity water at depth is very stable. The warmer the blob became the more strongly it resisted mixing. The warm water at the surface also altered weather patterns and helped to maintain the Pacific High (the "ridiculously resistant ridge") in position.

During early 2014 the warm water was offshore in the Gulf of Alaska while cooler than normal water was still present along the continental shelf from Mexico to Southeast Alaska. This relatively cool coastal water was a remnant of the generally cool conditions in earlier years and protected most marine species on the continental shelf from excessive warming during spring 2014, and especially during the critical period when juvenile salmon migrate to the ocean.

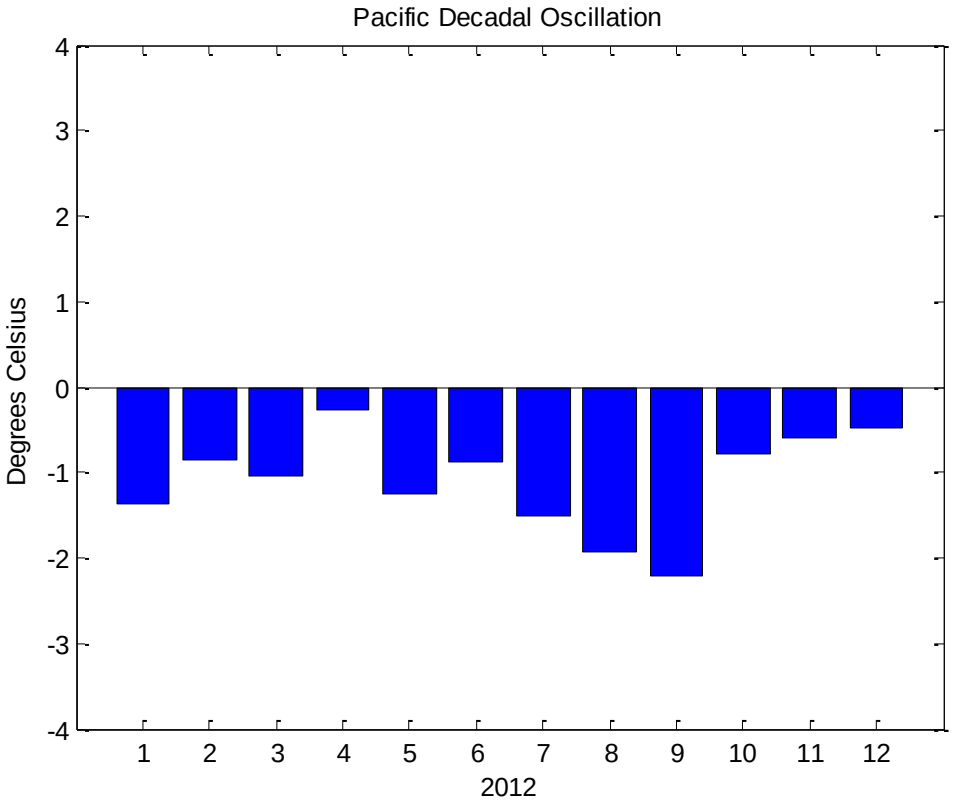
The coastal waters gradually warmed toward normal or slightly warmer seasonal temperatures by June and by August the warm offshore water had pushed in close to shore, bringing with it ocean sunfish, mackerel and an abundance of jellyfish (including the little blue Vellela vellela jellyfish).

Through October to December 2014 the warm blob was pushed eastward by the autumn storms, bringing extreme warm anomalies to the continental shelf and tight to shore. However the storms were not strong enough to cause much mixing. Many daily high temperature records were set at lighthouse stations throughout the winter and as an example Amphitrite Island (southwest Vancouver Island) had the highest winter temperatures since records began 80 years ago.

The winter of 2014/2015 was again marked by a strong ridge in position over California, continuing the drought and blocking winter storms from reaching the west coast. The weaker than normal winter storms in the Gulf of Alaska resulted in a further absence of surface mixing and allowed the warm water to remain in position through the summer of 2015.

And 2015 was a repeat of 2014 with warm water close to shore, huge quantities of jellyfish and an even greater number of ocean sunfish on the central coast. However I did not see mackerel or the Vellela vellela jellyfish.

The diagram on the next page shows water temperatures off the coast of Oregon plotted relative to normal by month in 2012, which was a good year for the salmon. Note that the temperatures were cooler than normal.


Pacific Decadal Oscillation
Degrees Celsius
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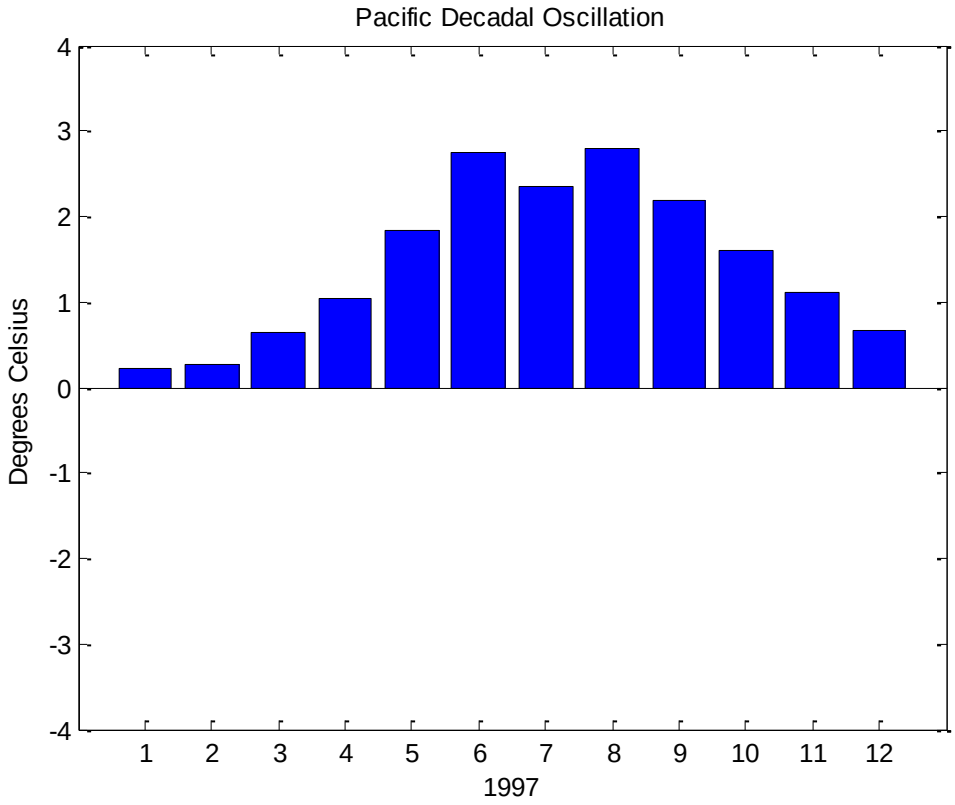
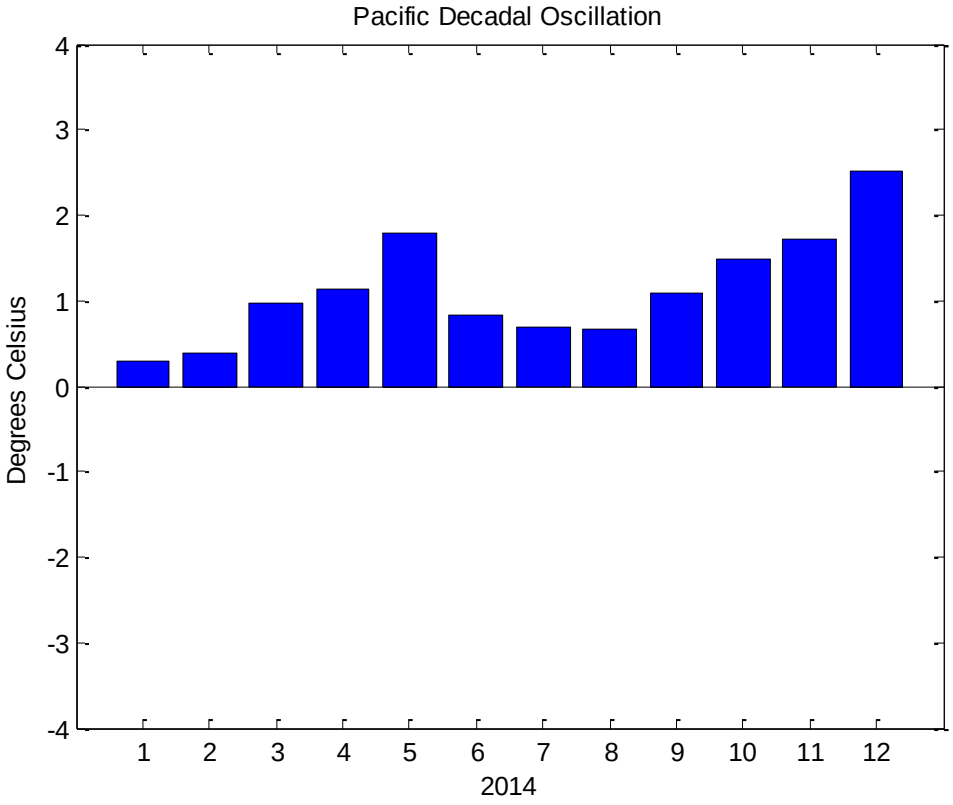
2012

The diagram below shows the water temperatures for 1997, which until recently was the strongest El Nino on record and an absolute disaster for the salmon. You might remember that after 1997 the wild coho populations crashed up and down the coast and for several years retention of wild coho was not permitted.



The next two figures show water temperatures for 2014 and 2015. The peak is of similar height to 1997 but the warm water has persisted for two years instead of one, and could stick around until the middle of 2016. This is bad for the salmon.


Pacific Decadal Oscillation
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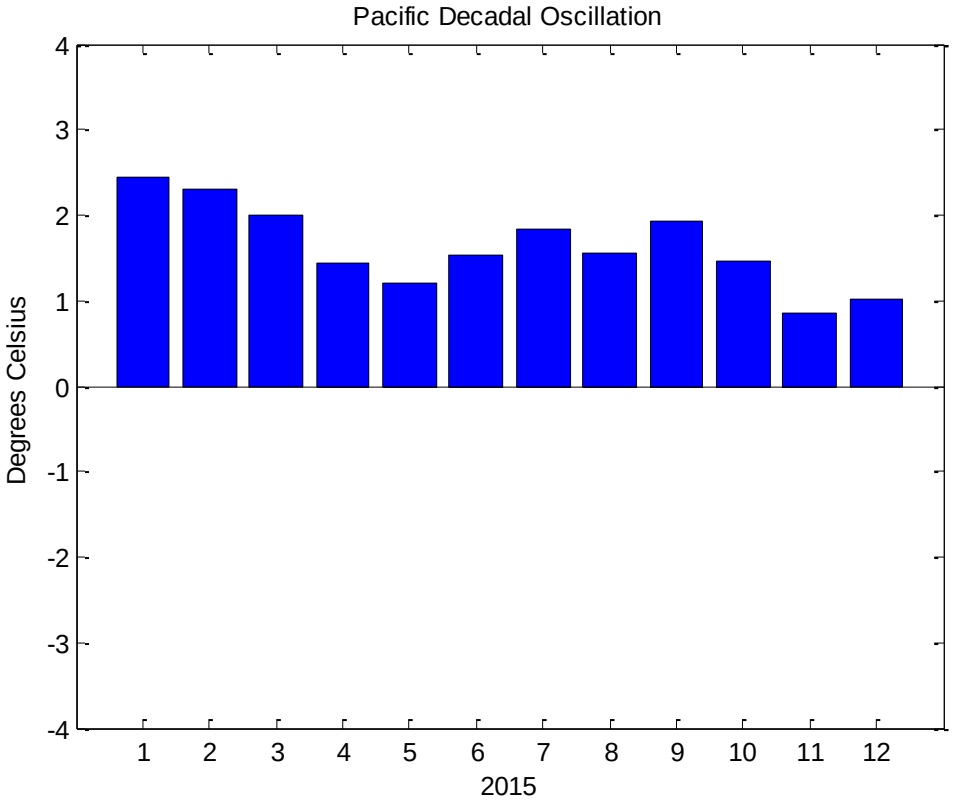
2014


Pacific Decadal Oscillation
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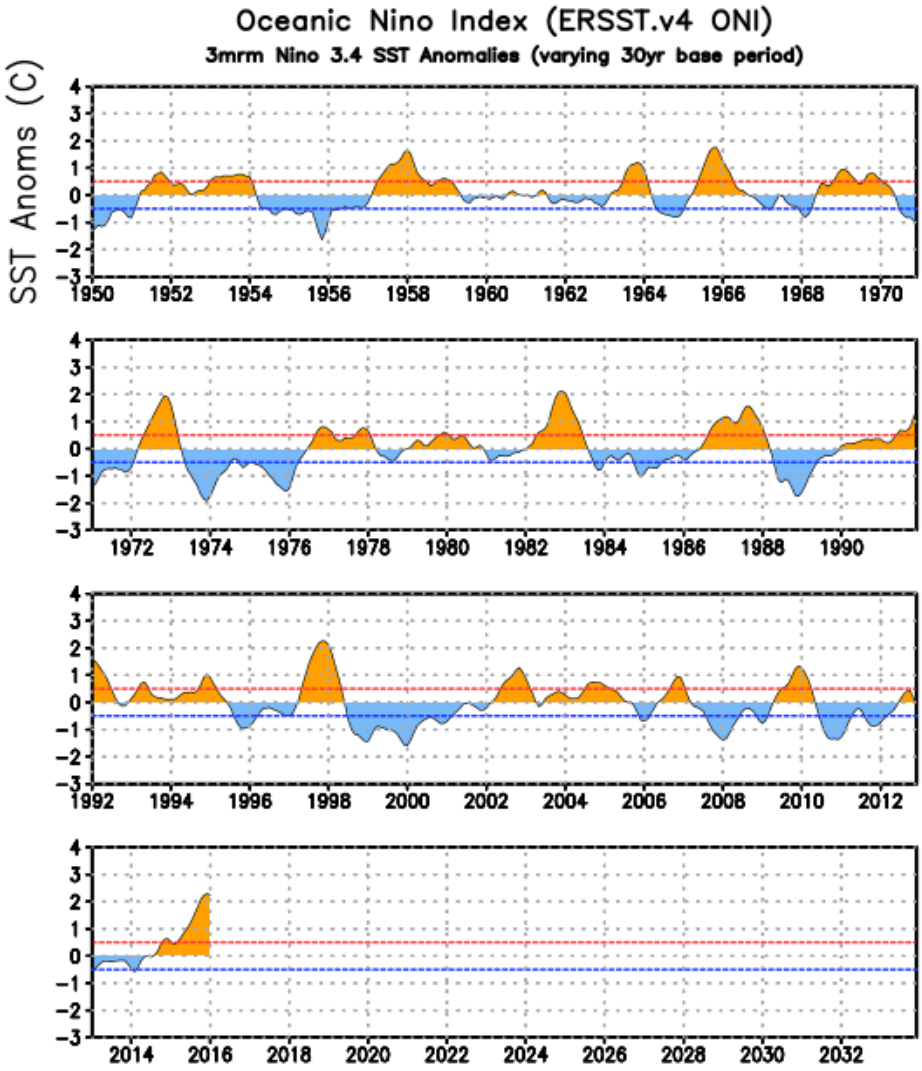
2015

This blob of warm water had nothing to do with El Nino, as we were in a La Nino or neutral regime for 2014 and almost all of 2015. However coincidentally a very strong El Nino did begin late in 2015, as shown in the figure below.



As I write this (in early April 2016) the El Nino is at its height and appears to be the same intensity as the 1997 El Nino, which was the strongest El Nino on record. The best guess at this time is that this El Nino will transition to neutral in June and will become a La Nina in October. So far the spring has been warmer than normal and extremely wet along the BC coast and will likely be followed by a hot dry summer and more warm water along the coast.

The one bright spot is that in the Vancouver area the storms this winter have been much stronger and more frequent than normal, which suggests better than average mixing of the ocean surface layer. This mixing sets the stage for a very strong spring phytoplankton bloom.

Summary: What to expect in 2016? With luck this warm water will clear by midsummer when the northwest winds start the upwelling again and bring cold water to the surface, but it may be too late to help the juvenile salmon that enter the ocean this spring.

We've had three summers (2013 through 2015) of difficult ocean conditions for the juvenile coho and chinook salmon. The juvenile coho that went to sea last summer will be returning to spawn in 2016, and I expect that once again there will be fewer coho than normal and they will be small in size.

The summers of 2011 and 2012 had good ocean conditions with low juvenile salmon mortality in the following winters. The ocean-type chinook salmon that went to sea in 2011 will be returning to spawn this fall as six year old fish and it should be a good run of big tyee salmon. There won't be a lot of them but they will be bruisers. Similarly the ocean-type chinook salmon which went to sea in 2012 should be plentiful as five year old fish, most likely in the tyee range.

And the halibut fishing continues to be good.

DFO and the 2014 State of the Ocean Report

The Fisheries and Oceans Canada 2014 State of the Pacific Ocean Report is now available at: http://www.dfo-mpo.gc.ca/Library/358018.pdf . The 2015 report should be available later this year.

And here's another really excellent report by the Northwest Fisheries Science Center which describes the Pacific Ocean off the coasts of Oregon and Washington during 2015: http://www.fwspubs.org/doi/suppl/10.3996/042010-JFWM-009/suppl_file/10.3996_042010-jfwm-009.s6.pdf .

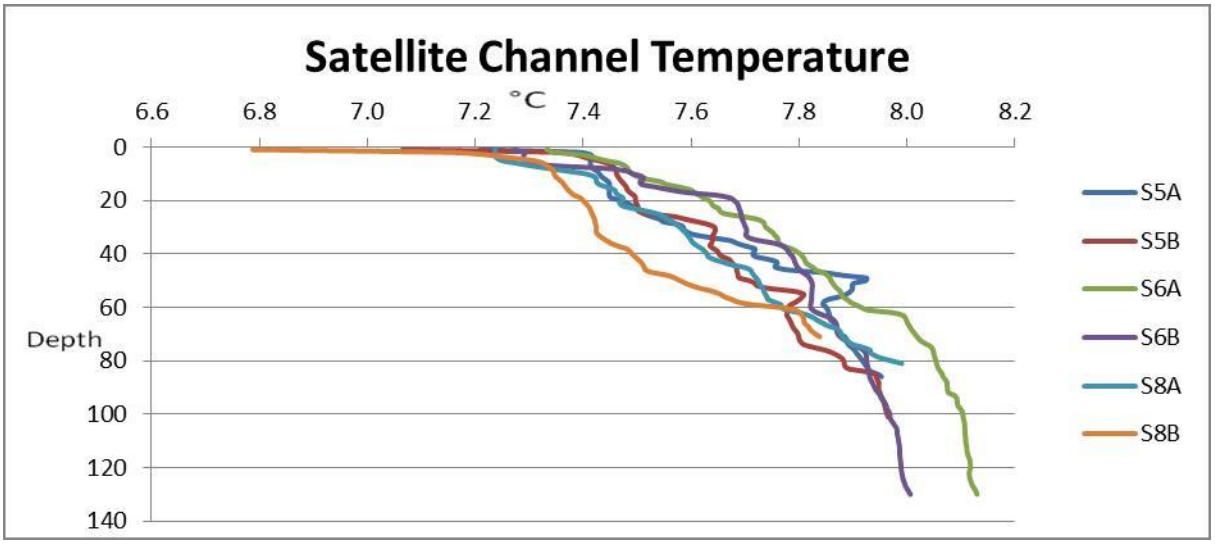
Water Temperature

Last May Dr. Charles Hannah at the DFO Institute of Ocean Sciences in Sidney lent me a Sontek CastAway CTD (http://www.sontek.com/productsdetail.php?CastAway-CTD-11) instrument for measuring conductivity, temperature and depth. Previous years I had used an inexpensive recreational temperature/depth measurement device which gave me questionable (and I now realize incorrect) results. The Sontek CTD is a serious scientific instrument and it was great to see what was really going on under the boat.

I was hoping that I could use the temperature information to find the depth at which the salmon were migrating, and perhaps catch more fish. It turned out not to be as helpful as I had expected – salmon and seawater are very complicated.

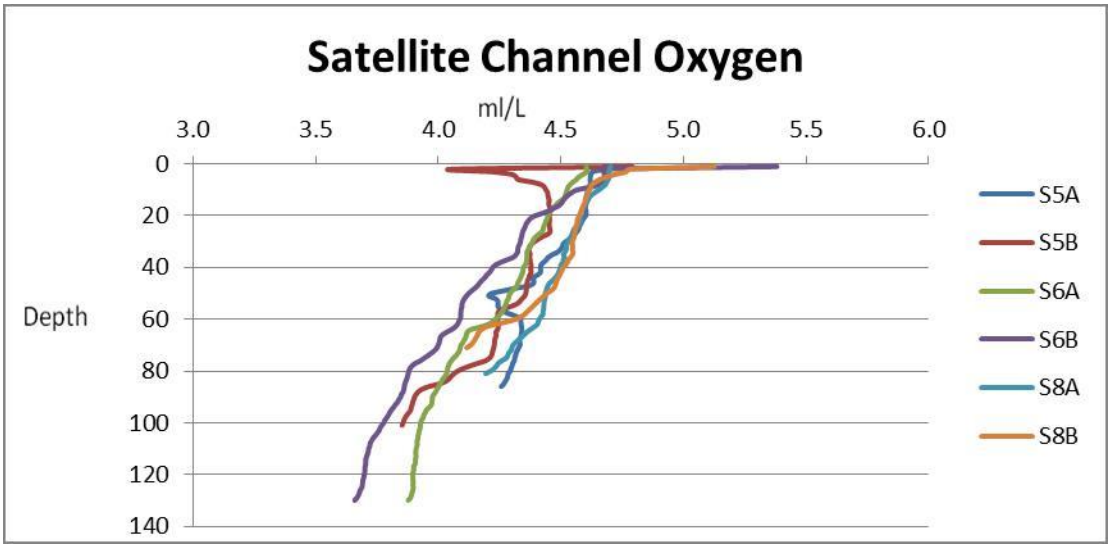
For starters seawater is much more complex than fresh water because of the dissolved salt (NaCl) and other minerals, which affect the density.

A typical winter temperature profile taken in January 2013 is shown in the figure below (this data was provided to me by Kevin Evancio and the research was conducted at the University of Victoria under the supervision of Dr. Diana Varela). Depth is shown in meters.



Satellite Channel is a highly productive fjord near Victoria, BC. The six different coloured lines represent sampling stations within the fjord. Note that the surface water is colder than the water at depth due to winter heat loss to the atmosphere. Normally cold water would have higher density than warm water, however in this case the surface water has a lower salt content than the water at depth, partly because of inflow of fresh water from rivers in the area.

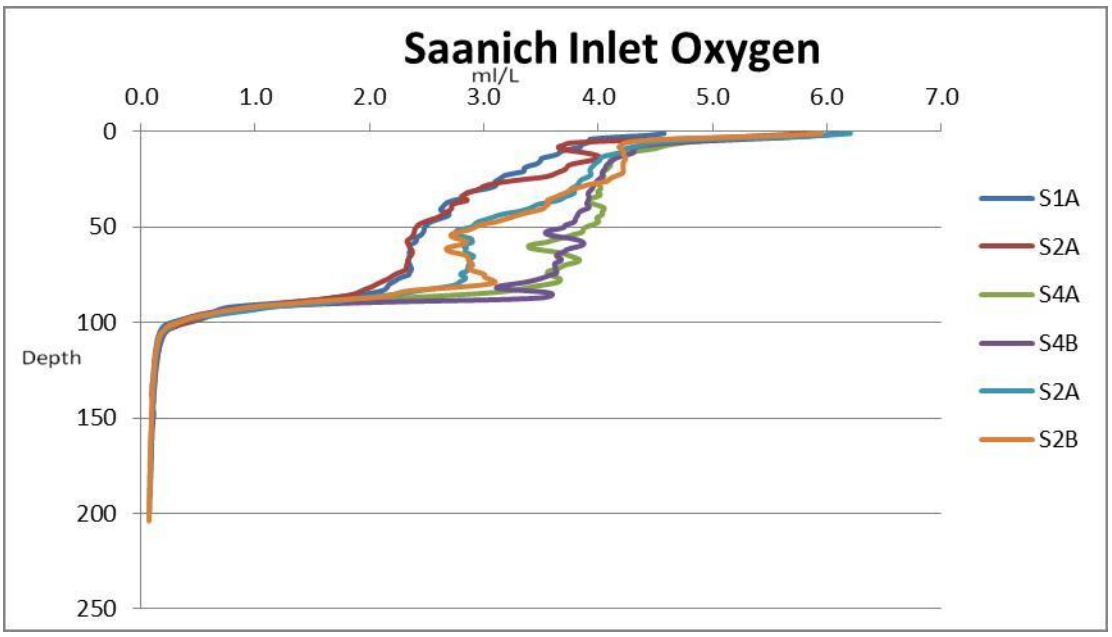
My personal experience fishing in the early spring is that the resident chinook are usually at depths of 120 to 140 ft (40 meters) or deeper. This would suggest a preferred minimum temperature of about 46° F (7.7° C).



The oxygen concentration is highest at the surface, where wind and wave facilitate the absorption of oxygen from the atmosphere into the ocean. Oxygen is also generated by phytoplankton in the surface layer during photosynthesis. Zooplankton and fish consume oxygen and the concentration drops with depth. Oxygen is also consumed by bacteria which feed on organic debris which slowly falls toward the bottom.

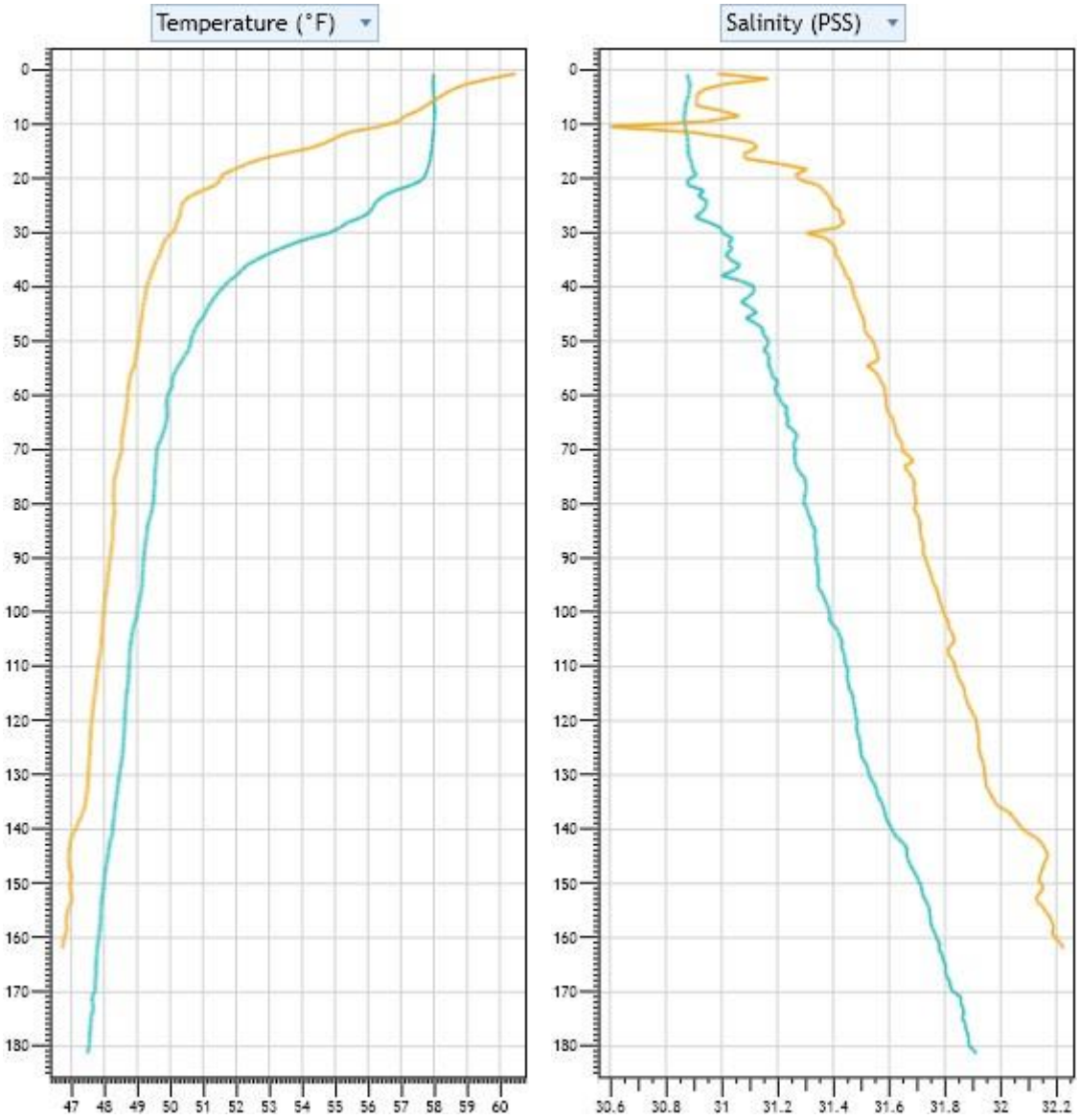
There is very little oxygen in seawater. The atmosphere contains approximately 21% oxygen (210 ml/L) while in seawater the dissolved oxygen concentration rarely exceeds 6 ml/L, even at the surface.

Satellite Channel is highly mixed due to turbulent tidal action in the area, and as a result the oxygen concentration does not drop off rapidly with depth.



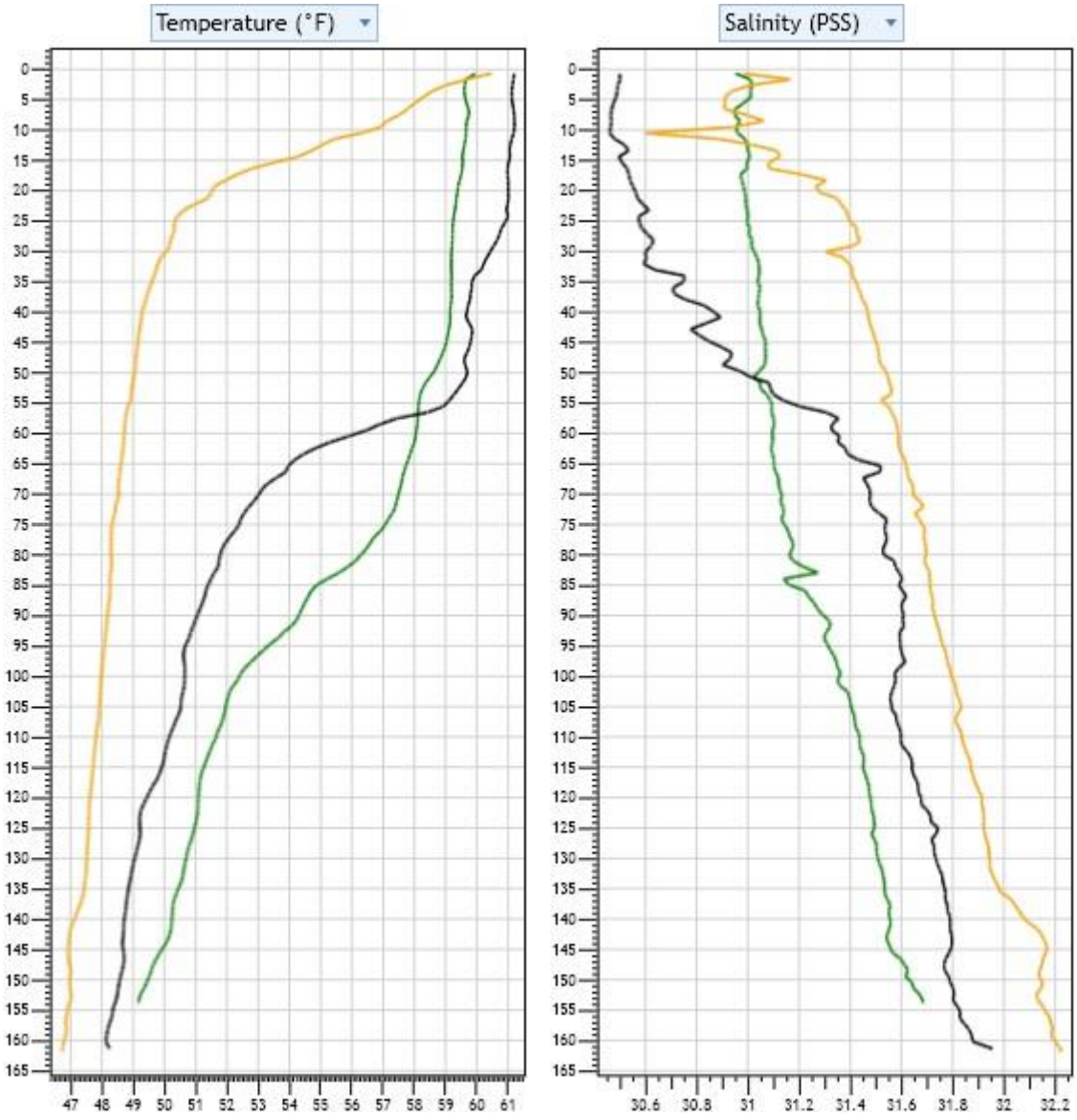
The figure above shows oxygen concentrations in Saanich Inlet, located only a few miles from Satellite Channel. Due to a shelf at the entrance to the inlet, at depths below 100 meters there is practically no mixing and the oxygen concentration drops to almost zero.

In the North Pacific Ocean oxygen concentrations are typically about 6 ml/L at the surface and drop to near zero at 500 meters. Lower oxygen concentrations at depth is one reason why halibut spend much of their time resting on bottom.



The figures above show temperature and salinity at Louisa Cove near Bella Bella (the depth is in feet). I took the data plotted in blue on June 21 and it shows a typical early season profile. Note the warm water from the surface to a depth of about 20 ft where there is an abrupt temperature break, and the cooler water deeper. The salinity increases gradually with depth.

The data plotted in yellow was taken July 5 after two weeks of strong northwest winds, which caused upwelling and brought colder water to the surface. Now the layer of warm water at the surface is thinner and the temperature break has moved up about fifteen feet. The upwelled water has higher salinity (there had been no rain). I thought the salmon would like the cooler water however shortly after the upwelling occurred the herring and salmon moved out of the area. In hindsight I realize that the upwelled water was probably very low in oxygen and relatively sterile, with no phytoplankton and zooplankton.

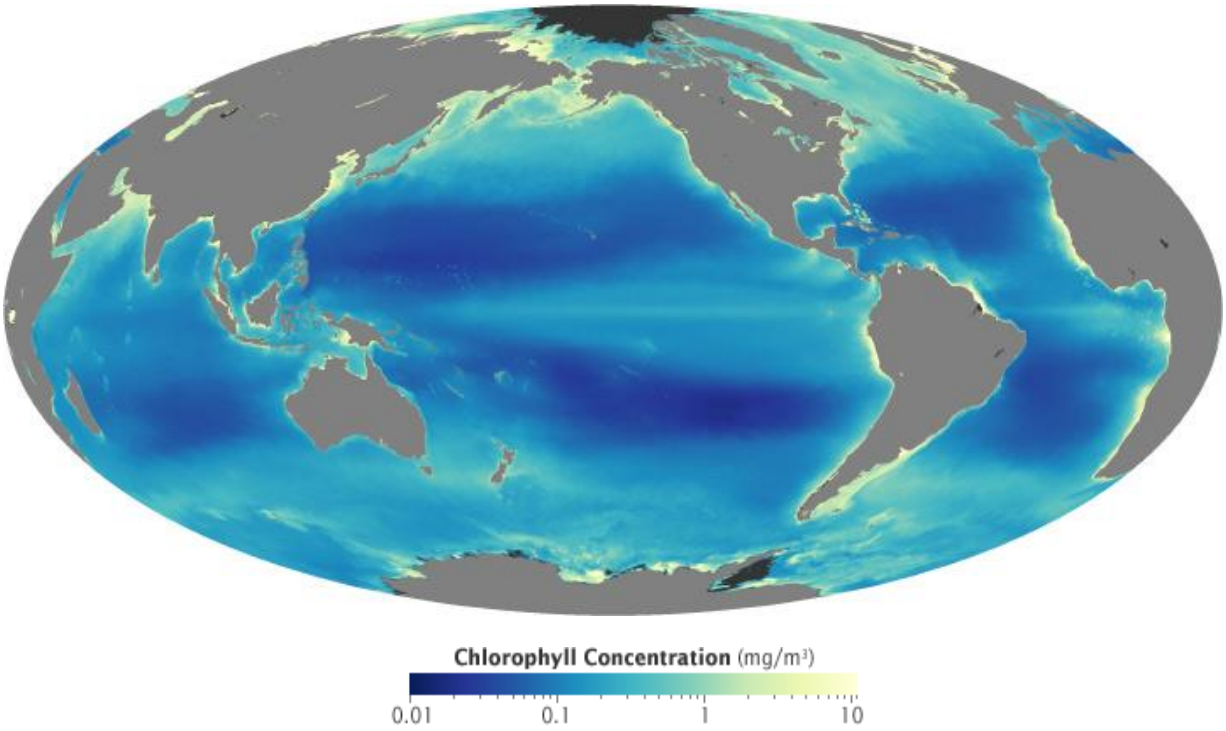


The figure above shows the Louisa Cove July 5 data plotted in yellow, with measurements taken July 17 and July 26 plotted in black and green respectively. Notice the surface warming which took place over the four week period. Also it rained between July 5 and July 17, reducing the salinity of the surface layer.

Summary: My observation during the summer was that the resident chinook salmon tended to rest in water which was below 50^{o}F. Also that the mature migrating chinook salmon are working harder so have higher oxygen needs and many were travelling close to the surface where the oxygen concentration was higher despite the water being uncomfortably warm. And thanks again to Dr. Hannah and DFO for lending me the Sontek CTD.

Upwelling

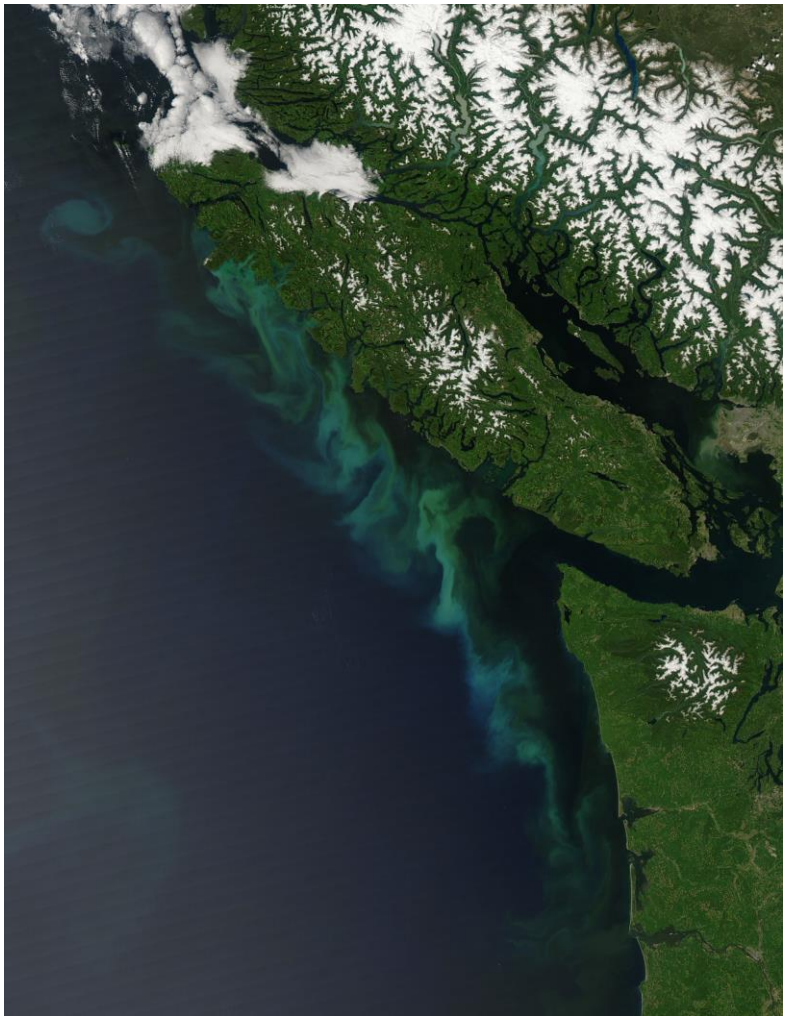
The figure below shows chlorophyll concentration in global oceans averaged from July 2002 to May 2010 (NASA image by Jesse Allen and Robert Simon, based on MODIS data from the GSFC Ocean Color team).



High chlorophyll levels indicate areas rich in phytoplankton. In the North Pacific and Gulf of Alaska violent winter storms mix the surface layer with nutrient rich water from the depths, and also separate the phytoplankton from their zooplankton predators. This sets the stage for explosive spring growth. The combination of warming surface water and increasing hours of sunlight triggers the spring phytoplankton bloom, which continues until the available nutrients in the surface layer have been consumed. Phytoplankton growth then falls off until winter storms mix the top layer again. However in areas of upwelling or tidal mixing the phytoplankton bloom may continue all summer.

Upwelling occurs along the equator due to convergence of the trade winds from both hemispheres, along the west coast of North America due to Ekman transport, and in areas of the open ocean where currents diverge or encounter sea mounts. Upwelling and mixing also occur closer to shore where tidal currents encounter shelves and pinnacles. In much of the open ocean there is very little chlorophyll and phytoplankton, due to a general absence of mixing and upwelling – this is why in the tropics the water is usually very clear and a brilliant blue in colour as compared to the BC coast where it is often a murky green during the summer.

Along the west coast of North America the two major areas of zooplankton and salmon production are the coastal Gulf of Alaska and the coast of California, representing downwelling and upwelling domains respectively. It appears that these two domains respond inversely to climate regime shifts. The highest ecosystem productivity along the coast is centered in the transition zone between the two systems, off the west coast of Vancouver Island (Ware and Thompson 2005).



The photo above shows the west coast of Vancouver Island spring phytoplankton bloom on June 15, 2006. Large offshore banks cause tidal mixing and northwest summer winds result in upwelling due to Ekman transport. The mixing and phytoplankton bloom continues throughout the summer and it is a very rich area for phytoplankton, zooplankton, baitfish and salmon.

Summary: Fishing lodges are often located where local ocean upwelling occurs. Examples include the edge of the continental shelf along the west coast of Haida Gwai and Vancouver Island, and subsurface features such as reefs and pinnacles that cause upwelling during normal tidal flow (Beauchemin Channel and Eclipse Point). The Gulf of Alaska is a very rich area for salmon because of the counterclockwise water flow, which results in downwelling at the edges and upwelling in the center of the gulf.

Anchor Line as Tow Rope

In June I served as marshal (a judge or referee) for the West Coast Salmon Masters fishing tournament at Hippa Island in the Haida Gwaii. On the first day of the tournament we were hit with a serious gale and forecast winds of 40 knots, requiring for safety reasons that we close the offshore area. In the afternoon a boat had motor failure in the south channel near Hippa Island, drifting in wind of 30 to 35 knots with occasional gusts that were much stronger. This is a very dangerous location as the channel is narrow with huge jagged rocks on both sides, but fortunately the wind was pushing the boat down the length of the channel rather than towards the rocks. Within minutes of the distress call six boats responded, none with a tow rope. All of the boats had throw lines (buoyant heaving lines) that were not strong enough to safely tow a boat in high wind and wave conditions. I rafted my boat to the disabled boat, tying the two boats together at the bow and stern and used my motor at slow idle to keep us in mid channel until the dock staff arrived with a proper tow rope. Rafting wasn't ideal but it did the job. During this time we experienced a gust which I believe exceeded 50 knots, turning the water frothy white in an area several hundred meters in diameter around us.

In hindsight each of the responding boats was equipped with an anchor and we could have used the anchor line for towing. It's not necessary to untie the anchor, which is fiddly and takes precious time in an emergency. Just transfer the anchor and chain to the other boat. In severe wind and wave conditions this can be done safely using the throw line – have the other boat toss the end of their buoyant heaving line to you, tie the anchor to it and lower it over the side so it can be pulled to the other boat. Then the anchor line can be tied off to the rear cleat of the towing boat and the bow cleat of the boat being towed. Thirty to fifty feet of tow line will do the job, and take care to tow the boat slowly (at less than ten knots).

Summary: During an emergency things happen quickly and there isn't time to think through a difficult problem. Anticipate the problem and work out the solution in advance. Every boat should have a rope suitable for use as a tow line.

The Salmon Highway

Although I was quite busy during the tournament and did not have much opportunity to do personal fishing it was still a fascinating experience.

Most of the fishing at Hippa is in the open North Pacific, totally unprotected, with big wind and serious ocean swells. Freeman Rock is a favourite spot and is a couple of miles offshore. It is right at the edge of the continental shelf where the bottom drops off rapidly to a depth of several thousand feet. There must be considerable upwelling of nutrient rich water from the depths, as the area has huge schools of mature herring and is rich with salmon.

There are so many salmon at Hippa and they are so easy to catch that most guests don't bother fishing at dawn and instead sleep in and have a late breakfast, fish for a couple of hours in the morning before returning to the lodge for lunch and also return early in the afternoon. Fishing is a relaxed, leisurely activity (except for the white knuckle wind and waves), very different from my experience on the central coast. During the tournament one of my duties was to inspect boats on the fishing grounds. Because there was a lot of money at stake all of the boats were running three rods and the majority of the boats were fighting at least one salmon all of the time. When a fish was on they would continue trolling and it was common to hook a second and sometimes a third salmon before the first had been released. Most of these were "cookie cutters", roughly 16 to 18 lbs (the season before the "cookie cutter" size had been 21 to 22 lbs). These are springs that are bulking up. Some might head to the spawning rivers later in the summer, but in June they are making a slow migration down the west coast of Haida Gwaii along the "salmon highway" past Hippa and Englefield and putting on as much weight as they can in the process.

There were so many salmon that it didn't make sense to fiddle with complicated baits like wire rigged teaser head herring (cut plug and Alaska roll are faster to prepare) and it wasn't necessary to use a flasher. Since a lot of time was spent releasing salmon, single hooks made better sense than tandem singles or trebles. Many guides just ran spoons or plugs. The continental shelf was very close to shore with water that was clear and blue in colour, and blue was a good colour choice for lures.

Summary: Hippa and Englefield lodges are both on the "salmon highway" and fishing there is a very different experience from fishing in Milbanke Sound, Caamano Sound and Whale Channel. Hippa has big water and many, many salmon.

Big Swells

Hippa very often has big swells offshore. One guide suggested to me that in these conditions consider setting the gear well back from the release clip, to minimize the up and down movement of the gear. Or set the gear close if you want to take advantage of the vertical movement.

Summary: It's a different world at Hippa!

Dummy Flashers

I rarely run in-line flashers, mainly because it's hard to feel the salmon during the fight (and especially when the salmon are small during the early part of the season). Most of my guests feel the same but there is no question that flashers are effective. Charlie White, the late fishing guru, estimated that using a flasher increased his success rate by approximately a factor of five, and this is consistent with my experience.

For most of last summer I ran a standard Hot Spot flasher as a dummy, usually just on one side of the boat. Through trial and error I've learned that the leader to the flasher should be long enough to allow the flasher to work but should not let it touch the propeller blade (I often leave the dummy flasher in

the water just below the surface while I fight a salmon). I run the terminal gear about four feet above the dummy flasher (just high enough that they don't tangle) and two to six feet behind.

A gangion is a short length of heavy braided nylon line which in commercial halibut fishing is used as a leader between the ground line and the hook. Many salmon fishermen and lodges use a length of gangion line between the end of the downrigger cable and the cannonball – this provides a heavy abrasion resistant working line to which the release clip is attached, and is especially useful when running Spectra or Dyneema downrigger cable. A bead chain swivel is generally used between the downrigger cable and the gangion, and the Scotty electric downriggers stop automatically at the swivel.

During the summer I started making up my own downrigger gangions, dummy flasher leaders and release clips. I was fortunate because I had access to the lodge tackle shop, but the materials and tools are also available at Pacific Net and Twine in Steveston BC.

Downrigger Gangion (left) and Dummy Flasher Leader (right)

I start with an 84 inch length of heavy braided nylon gangion line and attach a bead chain swivel to the upper end, using a one inch loop and a crimp connection. Then I thread the lower end through a Scotty soft rubber stop bumper and attach it to a Scotty plastic downrigger swivel and snap using another one inch loop with crimp connection. The bead chain swivel is tied to the braided downrigger cable with a Palomar knot and the lower end of the gangion clips to the downrigger cannon ball.

With this configuration the Scotty electric downrigger stops automatically at the bead chain swivel (a plastic stopper on the downrigger cable is not required), leaving about five feet of gangion between the downrigger boom and the cannonball. I attach the release clip a few inches below the downrigger boom and the dummy flasher leader is clipped in just above the cannon ball.

I usually fish from boats which have the downriggers mounted adjacent to the center console and about eight foot spacing between the downrigger cable and the propeller. For the dummy flasher leader I start with a 72 inch piece of 200 lb nylon monofilament to which I attach a swivel and snap with a one inch loop and a crimp connection. At the other end I attach a bead chain swivel and quick connect using another one inch loop and crimp connection. This leader has two swivels and the flasher a third, which probably sounds like overkill but isn't – it's really important that the line not twist and redundancy is good.

For attaching the terminal gear I like to use a release clip leader which is long enough to clip one end to the downrigger cable and hang the release itself just inside the boat by the downrigger where I don't have to reach for it while setting the gear. I make up my own release clip leaders, starting with 40 inches of 200 lb nylon monofilament. I put a big swivel on the snap and attach the monofilament leader using a one inch loop and a crimp connection. At the other end I attach the standard Scotty Power Grip Plus downrigger release with another one inch loop and crimp connection.

Summary: Before this summer I had always used downrigger gangions and release clips supplied by the lodge, however they are not intended for running dummy flashers and the stock often runs low during the summer. I enjoy making my own, I can get the dimensions right for my style of fishing and it reduces the workload on the dock staff. And I catch more salmon with the dummy flasher.

Red Flashers

Last summer the red flasher with Silver Horde Green Splatterback Ace Hi Fly was the gear of choice for most of the guides at the lodge throughout the season. I honestly don't know why the red flasher has been working so well for the past three summers but believe that it is associated with the warmer than normal water. The Silver Horde Green Splatterback Ace Hi Fly (http://www.silverhorde.com/ace-hi-fly-.html, #142 in double glow) and the Max Flash Green Alien (http://bugeyefly.com/bugeye-fly/max-flash/maxflash-greenalien.html) are excellent representations of small baitfish and do especially well on bright, sunny days.

Naked Anchovy

I rarely ran the red flasher with Silver Horde Green Splatterback fly last summer, mainly because I don't like to run in-line flashers, however the one afternoon that I ran this gear we caught a lot of salmon and had a great time. The bait equivalent is to run flasher and anchovy. I've found that if the anchovy is wire rigged the action is reliable without a flasher, and it can be run above a dummy flasher. Last season the West Coast Resorts Milbanke lodge stocked anchovy in addition to the normal big herring and it worked well for me.

And last summer my friend Paul Houston caught a 38 lb spring on a naked anchovy run with a small chartreuse Pro-Troll (model 5A).

Summary: A wire rigged naked anchovy can be run above a dummy flasher. In the early season the green/glow anchovy teaser head is my favourite, rigged with 18 gauge stainless steel "locking" wire. Or try a naked anchovy with a small Pro-Troll.

Blue Glow Splatterback Teaser Head

We had a strong phytoplankton bloom last summer and the water was green for the early season, then near the end of July the water cleared and turned blue in colour. In the past in these conditions I've used either the blue scale or purple haze teaser heads, but this year I also had a handful of blue glow splatterback teaser heads. I only had a few so used them sparingly but they were very effective. I think it was the combination of the blue colour and glow in the dark. Unfortunately I've since learned that this colour of bait head is now out of production.

Green Glow (top), Green Glow Splatterback and Blue Glow Splatterback (bottom)

Summary: In midseason when the water clears and is blue in colour consider the Rhys Davis Super Herring Special blue glow splatterback teaser heads – they work really well. My favourite teaser heads are now the green glow, green glow splatterback and blue glow splatterback.

Line Creep

Line creep is when the reel allows a little bit of line to pull out occasionally, usually due to wave action. Over time the belly in the line between the rod tip and the release clip gets larger and larger, with quite a bit of slack when a fish strikes. This is a particular problem when running hardware (which requires a faster trolling speed than bait) and especially when fishing deep.

I have a pair of Islander MR2 reels which I use for personal fishing, and they are great when running bait and especially with my light rod. The Islander reels are excellent with a silky smooth drag. However when trolling at higher speeds (for example when running hardware) a drag setting which prevents "line creep" might be too tight when a salmon is heading off on his first run. I don't like to lose salmon, so I set the drag as light as possible and while trolling fast the line often creeps out.

Last summer while personal fishing at the lodge I used a Daiwa M-One UTD 400 reel. The Daiwa M-One UTD has a seven disk drag system which is almost as smooth as an Islander on a dry day and is far superior in the rain, and still has some difference between static and dynamic drag. I also like the loud clicker because it is more exciting when fighting a fish. I spooled it with 100 yards of 30 lb Dacron

backing and 250 yards of 30 lb Maxima Ultra Green, followed with 50 yards of 50 lb braided Spectra and 10 yards of 40 lb Maxima Ultra Green.

Summary: The Daiwa M-One UTD solved the "line creep" problem and is an excellent reel. And the braided Spectra was outstanding in telegraphing the strikes to the rod tip. This is an inexpensive reel which can be used in all weather conditions, I strongly recommend it.

Chartreuse Dye

One day while personal fishing I tried the Pro-Cure Bad Azz chartreuse lime fluorescent bait dye (it was early season and at the time the water was green with algae bloom). I caught a couple of salmon but overall it was a slow day for me.

Summary: The chartreuse dye sounds good in theory but I'm not impressed.

Louisa Cove

Louisa Cove is fondly referred to as "Cowards Cove", because that is where the boats go to fish when it's blowing hard outside. It's a desperation move because usually very few salmon are caught when thirty boats are milling around in such a small area.

I really enjoy working for Terry Schultz. He knows that I guide because I love to be on the water, and when he has a trip with an extra guide Terry usually picks me to be unemployed and gives me the option of staying at the lodge to do personal fishing in one of the spare boats.

On June 29 I was unemployed and left the dock at 5:00 am to fish from the Notch south to the back door. There was no bait in the area and I didn't have a touch. I moved to Cape Mark about the time that the other boats were leaving for the halibut ground, and lost a nice coho at the north end. I saw very little bait and had no other hits so I moved to Cheney Point and trolled north to Cheney 2. There I changed from teaser head herring to an Irish Cream spoon and hit what felt like a solid spring that I lost. Then back at Cheney Point I lost another nice spring, perhaps 20 lbs, near the boat. There did not seem to be a bite associated with the early morning low slack or the 1:00 pm high slack (in hindsight it was a few days before the full moon and the salmon had probably been feeding during the night). Just after 1:00 pm the northwest wind came up and I moved into Louisa Cove, intending to make one final pass and go in early. To put this in perspective, I love fishing by myself and am quite comfortable fishing from dawn to dusk – on this day I was so frustrated with the slow fishing that I was seriously planning to go back to the lodge and watch TV.

For my final pass I changed to a green glow teaser head above a red dummy flasher and dropped the gear to 99 ft (Wayne Gretzky, a favourite depth), trolling straight down the middle of Louisa Cove past the lodge. As I approached the land at the far end of the cove and the water shallowed to 100 ft I was just reaching for my rod to pull the gear, when it snapped down and I fought a nice spring that I lost. This caught my attention. I set up again and as I turned to continue the pass I hit a 22 lb spring, excellent

fight, that I kept. Then I noticed on the depth sounder a group of springs sitting just above the bottom along the 100 ft contour. I followed this contour for the next hour and caught and released six more springs, until I couldn't see any more salmon on the depth sounder. All this on a single rod. It was blowing 20 knots outside, big whitecaps, and Louisa Cove was like a lake. I was all alone at the south end with most of the boats from two lodges milling around the mouth of the cove catching coho. I was catching springs two hundred yards from the lodge.

Later when I cleaned the 22 lb spring I noticed that it was a resident, the eggs were immature and it would not be spawning for another year.

The next morning I fished with Oscar, the sous chef, with one rod at 99 ft and the other at 37 ft. Right in front of the lodge Oscar hit a 22 lb spring on the shallow line. This spring had mature eggs and would have spawned in the fall. Terry later told me that it was his observation that the salmon often move into Louisa Cove with the flood tide and leave on the ebb.

Summary: The fishing in Louisa Cove can be surprisingly good, and is best during the flood tide or shortly after high slack. Expect the resident springs to sit just above bottom and to be deep, while the mature migrating springs often run shallow.

Rage Reef

One trip last summer I had a lovely couple, Kevin and Trudy, as guests. Trudy was new to salmon fishing but had done quite a bit of scuba diving in the Caribbean. It was a very windy afternoon and we were fishing the inside of Rage Reef, protected from the big swells pounding on the rocks a short distance away. She mentioned to me that fish don't like turbulence, the dirt and sand gets in their gills and is very uncomfortable. In the Caribbean it is common to see the fish concentrated in the clean water on the protected (downwind) side of the reef.

In early July Darrell was fishing in 35 knot winds, on a day that most guides would have given up and taken their guests back to the lodge. He was able to find a small patch of protected water behind the big rock at the back door and guided his guest to a 50 lb salmon. The big spring was probably trying to stay out of the turbulence caused by the waves crashing against the shore.

Summary: Expect that in heavy swell conditions the salmon and baitfish will be concentrated in the calm water on the protected (downwind) side of the rock or reef. The salmon may be waiting for injured baitfish to be washed through openings of the reef.

Full Moon

This summer I noticed once again that when there is a full moon and no cloud cover the morning salmon bite is usually dead. This is a good time to fish for halibut or bottom fish at dawn.

I realize now that as juveniles the salmon feed actively at night, usually on copepods and euphausiids. These large zooplankton go deep during the day to avoid predators, then rise to the surface at night to feed on the phytoplankton. In the North Pacific and Gulf of Alaska during May and June the hours of darkness are short (from perhaps 11:00 pm to 3:00 am) and the competition for zooplankton at the surface can be very intense. As the salmon grow larger they transition to feeding on squid and herring, which also feed on zooplankton at the surface at night but are more difficult to locate in the darkness. For this reason the larger salmon usually feed most actively at dawn and dusk, except for the nights when the moon provides enough light to catch a fast moving prey.

Summary: When you get up before dawn and see the moon shining brightly, expect that the salmon fishing may be slow in the morning but also may be very good in the afternoon and evening. Consider heading out for halibut or bottom fish in the morning instead.

Pop Up Strikes

When fishing is slow I sometimes set a third rod out the back with a four ounce sliding ball weight, often with teaser head or Pro-Troll herring and set to run a few feet behind the motor turbulence and at a depth of fifteen to twenty feet.

I can remember one lovely summer afternoon a few years ago when fishing was slow, and we were trolling along just enjoying the scenery when suddenly a twenty pound salmon came shooting out of the water behind the boat. He waggled once, winked at us (maybe, I'm not positive about that) and hit the water with a big splash. It definitely woke us up and it took my guests a few seconds to realize that the salmon was connected to one of our rods -- by the time they picked up the middle rod he was long gone. We had a similar experience the next day with another twenty pound salmon.

I also occasionally get strikes on the downrigger when the salmon takes the line off the release clip and the rod tip pops up, with slack line. When this happens it is also very difficult to hook the salmon.

This summer I realized that these "pop up" strikes occur when the salmon is running much deeper than the gear and approaches the bait from below at high speed. He is swimming so fast that after taking the bait his momentum carries him up towards the surface and sometimes into the air.

Summary: When you see a "pop up" strike the salmon was probably running much deeper than the bait and approached from below at high speed. Consider setting the gear deeper.

Land Breeze / Sea Breeze

Land breezes and sea breezes are common in the tropics. During the day when the land is warmer than the sea an onshore wind develops. At night the land cools and the wind changes direction, blowing from the land towards the sea. In mountainous areas along the BC coast, and particularly where there are snow fields and glaciers at higher elevations, both the sea breeze and the land breeze can be very strong. It is common during the winter months to have "outflow" winds (gravity fed katabatic land breezes) in major inlets that are gale or storm force, and very dangerous to boaters.

On the central coast during the summer in clear sunny weather we have classic land and sea breezes, although this may not be obvious. Clear sunny weather is normally accompanied by northwest winds. During the night the land breeze (from the east) cancels the northwest wind, while during the day the sea breeze (from the west) augments the northwest wind. The result is often very little wind from dawn until about 10:00 am followed by howling northwest winds starting around noon.

This summer I noticed that this pattern only occurs if the nights are clear. It makes sense – if the night is overcast the land does not cool as rapidly and there is no land breeze, and the northwest wind will still be blowing strongly at dawn.

Summary: If the night is clear it will probably be calm at dawn. When a northwest wind is forecast and the night is overcast it is often windy at dawn.

Big Salmon Often Swim Shallow

Earlier in the season the salmon had been deep, typically 80 ft and deeper, but as August began I started noticing on the depth sounder huge markers at shallow depths – for example 15 to 30 feet. This didn't make a whole lot of sense as the water temperatures had been increasing and should be uncomfortable for the big salmon. In hindsight I now realize that the surface water had higher oxygen levels, which the big migrating salmon need because they are swimming almost continuously (while the resident salmon spend most of their time resting and digesting their last meal, so can tolerate lower oxygen levels).

On August 7 the afternoon was quiet and I rigged a third rod to run out the back with a four ounce ball weight and teaser head herring at ten pulls (running at a depth of perhaps 20 feet). I rarely run a third rod because I can't watch it – I have to face forward and steer the boat, and in my experience my guests rarely watch the middle rod and miss most of the strikes. In this case my guests both wanted to set their own depths and I thought they were fishing too deep considering the markers I had seen on the depth sounder. And they promised to watch the third rod.

As we trolled past Cheney 2 we ran over a huge marker at 30 ft and I turned around to watch the rod (which was directly behind me), expecting a strike any second. I waited and waited and nothing happened. Finally I had to turn forward to see where the boat was going, and as I turned I noticed a funny look on my guest's face. He said that he had just seen a violent strike on the rod. When I brought in the gear the teaser head herring was raked from one end to the other, it clearly had been hit by a

large salmon. I was somewhat disappointed that my guest hadn't reached for the rod, and it may have shown. That was the last time during the summer that I ran the third rod.

The following day Lyle Hanson hooked his huge salmon at 22 ft.

Summary: Fish deep for resident salmon and consider fishing shallow for the mature migrating salmon, even in warm water conditions. Running a third rod only makes sense if someone is watching it and will make the effort to strike the salmon.

A Giant Chinook

On the morning of August 8, 2015 at Milbanke Sound, Lyle Hanson guided Rick and Betty Mailhiot to a pair of tyee in the mid 30s which completed their chinook possession limits. After lunch he took them to the Robb Point lighthouse at Ivory Island to fish for coho where they saw a huge swirl in the water near shore. Lyle trolled over thinking that a group of coho had cornered a small school of baitfish, but instead they hooked up with a giant chinook. Fortunately the salmon came to the boat without difficulty and they were able to hold it in the water and remove the hook without using the net (it was probably too big for the net anyway). Lyle measured the salmon twice to confirm the measurements (50 inches in length and 37 inches in girth) then released it. Terry Schultz, the lodge manager, later used the Fisheries and Oceans Canada equation to estimate the weight at approximately 85 lbs. The salmon was caught on a red flasher and Silver Horde Green Splatterback hootchie at 22 feet.

I chatted with Lyle the next day. We've guided together for several years and I trust his measurements. Many guides and guests would not have released a salmon of that size but Lyle, to his credit, allowed the salmon to continue its migration. Perhaps we'll see some of its offspring in the future.

Summary: Many guides tire of killing salmon, especially the big ones, and would prefer to see them swim free (it feels wonderful to release a big salmon). And don't assume that the sand lance and immature herring imitations only catch small salmon.

My Website

I now have a website (www.thescienceofsalmonfishing.com) and have begun to advertise the book.

If you've had a chance to read the book please send me an email, I am very interested in your comments. And if you have already sent me your comments, many thanks. I take all comments seriously and as a result have made a few changes to the book this year. Most of the content is the same but it has a new title (The Science of Salmon Fishing) and has grown by about 20 pages. Also I've shuffled the chapters a bit so the material flows better.

Have a great summer and I hope to see you on the water.

Bill Haymond