



Rare glass sponge reef campaign builds momentum and awareness

by Tella Sametz and Amanda Adams

Meet Mr Stinky, a glass sponge. He's a finger goblet sponge, to be exact, and he's becoming quite the celebrity. Three young women from the BC chapter of the Canadian Parks and Wilderness Society (CPAWS) came to Sechelt recently to introduce Mr Stinky and update us on what has been happening

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In this issue we investigate four lower Sunshine Coast waterways that the SCCA plans to nominate as Fisheries Sensitive Watersheds. Tella Sametz photo

Habitat Area Nomination Project to help protect Fisheries Sensitive Watersheds

A major current effort of the SCCA is the Habitat Area Nomination Project, through which we will move to formally nominate specific areas of the Sunshine Coast Forest District as either Wildlife Habitat Areas (WHAs) or Fisheries Sensitive Watersheds (FSWs). A touring educational program about biodiversity and how to protect this region's biodiversity is also a component of the project.

With this issue of the SCCA newsletter, we begin the process of publishing our research. Please turn to page 7, where we look in detail at four FSWs on the populous lower Sunshine Coast: Chapman Creek, Wilson Creek, McNab Creek and Dakota Creek. Future issues of the newsletter will examine FSWs elsewhere in the forest district and also discuss important WHA nominations for marbled murrelet nesting habitat. Much additional information on all aspects of the HANP can be found on the SCCA website at www.thescca.ca.

Mountain goat winter ranges designated, finally, after 13 years

by Daniel Bouman

On October 15, 1998, BC's Ministry of Environment submitted a package of maps and data about mountain goat winter ranges in our region to the Ministry of Forests office in Powell River. The information was to be used to confirm formal protection of the ranges under the Forest Practices Code. The date for the information to be delivered was mandated in law. The MoF refused to accept the information. The maps, they said, were the wrong scale. And so began a 13-year tale of contention—one that ended with the designation of winter ranges in the Sunshine Coast Forest District in 2012.

Back in 1999, before the logging industry was deregulated, people had a right to view forest development plans and see where logging was proposed and what comments had been made by various government agencies. Members of the SCCA always paid attention to these opportunities and became very alarmed to see numerous logging proposals in mountain goat winter ranges, marbled murrelet nesting habitat and scarce stands of old growth—despite the objections of the government's own biologists. In March 2000, the SCCA filed a complaint to the Forest Practices Board (FPB) citing 121 cut-blocks where logging proposals targeted rare old growth and wildlife habitat. It was also alleged that the MoF's refusal to receive winter range data and maps was unreasonable and putting mountain goats at risk.

The FPB issued a non-binding decision 2½ years continued on page 2

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Mountain goat winter range

later. They disagreed that wildlife habitat was being targeted but found that the MoF had been unreasonable in rejecting the maps and data from the MoE, and that two major logging plans were inappropriately approved, as they failed to adequately protect mountain goats. This was good! One benefit of this decision



Nanny goat and kid foraging at BC's Cathedral Lake

G McCallum photo

was that, henceforth, the FPB would raise the issue of the winter ranges directly and frequently with the highest levels of the provincial government.

We were pleased but not finished. In 2003 the SCCA filed a complaint with the Sustainable Forestry Initiative (SFI) that its client (Interfor) was not meeting program deliverables for wildlife management. Interfor initiated an internal review and dismissed our complaint. Their SFI performance auditor also dismissed our complaint. We countered with a complaint against the auditor and an appeal to the Sustainable Forestry Initiative Board in Norfolk, Virginia. The SFI board agreed to investigate our complaint. A year later they issued a finding that our complaint had merit and that Interfor was in a non-compliant position. Interfor paid for the investigation and provided restitution: a field book about at-risk species. They didn't lose their certification and they didn't have to give up logging approvals in the winter ranges. So, our work was still not finished.

One remaining issue was very disturbing to us; how could a forester, as a member of a self-regulating professional body with obligations to a code of ethics and a standard of practice, possibly have authorized so much logging damage to identified critical wildlife habitat? In 2004 the SCCA launched a complaint to the Association of BC Forest Professionals (ABC FP) about the ethics of the forester who had authored two logging plans that the FPB had found to be inappropriately approved. The ABCFP's legal counsel

quickly rejected the complaint. The SCCA filed for a judicial review in the BC Supreme Court. The court found that the ABCFP's counsel had considered inappropriate information in rejecting the complaint. After that, counsel reconsidered its decision and again refused to allow the complaint to be investigated. We were not satisfied, and the case went back to the BC Supreme Court. In 2007, the court found for the second time that counsel had not

properly considered its decision. This time, the complaint was referred to an investigating committee. A finding was issued a few months later. The investigating foresters found no ethical problems with logging at-risk species habitat. They explained that the ABCFP considers the habitat of at-risk species a land-use issue—the responsibility of government and not an ethical responsibility of professional foresters.

This was disappointing but not surprising. We were pleased that the case opened up the complaint process to the public. We felt confident that foresters had received a strong message: that the public considers damaging wildlife habitat to be unethical even if they do not.

Meanwhile, government took a small step toward protecting mountain goat habitat; a "non-spatial" order was issued in 2006 requiring logging companies to maintain an inventory of intact winter ranges. MoE biologists continued to urge protection of ranges. The SCCA continued its monitoring activities. When we had a first meeting with newly organized BC Timber Sales in 2005, BCTS wanted to know what was important to the SCCA. We asked them to stop obstructing winter range protection and start sup-

porting designation of lands identified by MoE biologists. And they did! By 2004 Canadian Forest Products had given up all its logging approvals in marbled murrelet habitat and in the winter ranges of the Howe Landscape Unit. In the end, only about 30 of the cut-blocks cited in the complaint to the FPB were ever logged.

The Sunshine Coast Mountain Goat Winter Range Plan, which covers 47,000 hectares, was officially designated in May of this year. Incredibly, government made no official announcement and didn't even notify us. That's fine with us, but we feel that supporters deserve to know that their efforts and involvement with the SCCA over these many years have helped make this outcome possible. Thank you!

How many mountain goats are there in BC? About 50,000, more than half the total worldwide population.

Are goat populations stable? Reasonably so, yes. But numbers are low, and BC still allows goat hunting.

Where do mountain goats live? Goats are uniquely adapted to survive on steep, rocky slopes. They inhabit remote mountainous areas on the coast and in the interior.

Why do their winter ranges need protecting? The goats' escape terrain provides little forage, so it is vital that nearby feeding sites, including old growth and mature forests, are undisturbed, especially in winter.

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Saving our rare glass sponge reefs

to protect the sponge reefs discovered off the coast of Sechelt.

Mr Stinky, who originally hails from the southern Strait of Georgia, was brought up from the seafloor by research scientists from Natural Resources Canada. He joined up with the folks at CPAWS-BC for a tour to coastal communities, and after only a few hours in an enclosed van he had earned his name!



Left to right: Jocelyn Nelson from CPAWS-BC, Mr Stinky and Jason Herz, SCCA chair.

Mr Stinky is surprisingly light, not like corals you typically find elsewhere. That's because sponge reefs are built up as lattice-like structures composed entirely of silica, which also makes them delicate and brittle. Yet they can form structures up to 25 metres high—the height of an eight-storey building—and thousands of years old. Pioneering sponges attach themselves to a rocky substrate, then new sponges build up the reef by growing on top of dead ones. Coral reefs form the same way.

Glass sponge reefs covering 1,000 square kilometres of sea floor were first discovered in BC's Hecate Strait in the late 1980s. Over a decade later more reefs were found, this time on the sea floor in parts of the Strait of Georgia—just off the

Sunshine Coast, West Vancouver and the southern Gulf Islands. Glass sponge reefs were once thought to have long been extinct; only fossils had been seen. Now we know that the reefs not only exist, but that they live and flourish right here in BC.

The northern McCall Bank reefs are located just off the coast of Sechelt at depths ranging from 90 to 210 metres. They can reach heights of up to six metres and have a footprint of about 180 hectares, spread over an area of some four square kilometres.

Glass sponge reefs provide a crucial haven for juvenile rockfish and other marine species, and they form the basis of an ecosystem that extends well beyond the reefs themselves. Refuges like these are especially important in regions of high human use, such as the Strait of Georgia. The health of the reefs is an indicator of the health of our oceans, and is ultimately connected to our quality of life.

These fragile reefs are easily damaged; while the reefs in Hecate Strait have some protection, those in the Strait of Georgia remain threatened. CPAWS-BC and the SCCA are working together to help preserve this natural wonder of the world.

Our goal is to secure initial protection for the glass sponge reefs through voluntary fishing closures, and then ultimately through the creation of Marine Protected Areas.

Here's what we're doing to protect these amazing creatures

1. Letting people know about these rare reef builders, the unique habitats they create, and where they are located.
2. Creating signage to educate folks about glass sea sponges. Signs have already appeared at various locations.
3. Talking with commercial fishers and prawn trappers so they can participate in preserving sensitive areas. This will contribute to the sustainability of our fisheries and the economy they support.
4. Talking with recreational fishers so we can preserve areas as nurseries for surrounding recreational fisheries.
5. Continuing to work with all levels of government to have these areas designated as Marine Protected Areas to ensure the long-term health of the Salish Sea.
6. Obtaining photos and videos of our local reefs for research and educational materials and making these available on our website.
7. Encouraging people to help get the word out.

It's all about the biodiversity

Why do we bother trying to preserve fish habitat and mountain goat winter range and strange underwater phenomena like glass sponge reefs?

In a word: **biodiversity**.

In the last issue of the SCCA newsletter, we gave the following definition of biodiversity: **the variety of living things and the variety of ecosystems that supports them.**

So why is that important? Biodiversity is a measure of the health of our ecosystems. Here are just a few of the benefits of robust levels of biodiversity:

- Biodiversity supports critical ecosystems. Clean air, climate stability, water purification, nutrient recycling, soil fertilization,

insect pollination and erosion prevention are all dependent, to a certain extent, on biodiversity.

- Biodiversity is important to agriculture, as diseases and predators can seriously damage dominant cultivars.
- Reduced biodiversity has frightening implications for global human health, through climate change, new disease vectors and a lack of drinkable water. Biodiversity helps new drug discoveries and makes medical resources available.
- Many industrial materials derive directly from biological sources. Loss of biodiversity is a significant risk factor for business development and threatens long-term economic stability.
- Biodiversity enriches leisure activities, inspires artists and forms an integral part of the worldview of many human cultures. It has intrinsic aesthetic and spiritual values for all people.

Hidden Grove: a Sunshine Coast success story keeps getting better

by Bob D'Arcy

For everyone who has not kept up on progress at Hidden Grove, you have been missing the creation (and polishing) of a jewel on the Sunshine Coast. In just the past 18 months there have been many developments.

A charitable society was formed in 2011 so that money might be more easily raised for major projects. Including “in kind” and \$15/hour accounting for volunteer labour, the Sechelt Groves



Hidden Grove's new entrance kiosk.

Bob D'Arcy photo

Society has raised over \$60,000. Much of the “in kind” donations are local businesses giving either substantial discounts or free services or both. The SCCA's own Jason Herz has been at the forefront of this. Cash grants have been received from several large organizations. The District of Sechelt has assisted directly in some work, and the Sechelt Community Forest has been very helpful and supportive. And, of course, there are the volunteer trail builders who work every week, year around.

There is now a surfaced parking lot that includes two spots for handicap parking and a bus/RV parking lane. The lot is busy, so there are plans to add some more spots without taking down any trees. Proper signage is in place.

All of the many trails have posts at every intersection with maps and guidance. You will not get lost!

Thanks to the Community Forest and West Coast Log Homes

an impressive entrance kiosk, built from large cedars and roofed, is installed at the start of the trails. It contains a bench and clear, illustrated signs about the Groves with guidance for the visitor.

On May 13, 2012, there was a grand ceremony celebrating the completion of the “Take It Easy—Ayat-tsut” accessibility trail, opening up the heart of Hidden Grove to wheelchairs, those with walkers, moms with strollers and seniors who may have problems on forest trails. The roughing in of a second accessibility trail has been done, and it is planned to have “Monty's Way” open before year end. The volunteer workers are keen to get at it.

Aside from the major projects there is ongoing maintenance and new trail building. Application has been made to protect the whole Groves area as a recreation site under Section 56 of the *Forest and Range Practices Act*. It is to remain a natural, recreational area with no formal structures or facilities within it.

Everyone should visit, often. You are encouraged to review the Groves at the website, secheltgroves.com, where you will find maps, photos, virtual tours, updates and more—even an opportunity to join the Society online and support the work.

Changelt at the SC Credit Union

The SCCA would like to thank all its members and supporters who have been able to donate to us in past years. The Sunshine Coast Credit Union (SCCU) has also supported the SCCA by providing its banking services to us free of charge since 1998.

Recently, SCCU extended its community support through a new program called Changelt, providing free registration with this program to local charities, including the SCCA.

Changelt is a program whereby SCCU members can choose to round up their MemberCard (debit card) purchases and designate their change to their favourite local charities, such as the SCCA. Activating a MemberCard is simple and can be done in minutes online at www.changeitcanada.com or by visiting one of the three SCCU branches in Pender Harbour, Sechelt and Gibsons. You then set your rounding preference, your maximum donation and which charities are to receive your change. The total donations are shown as one transaction each month on your statement.

Monies directed to the SCCA will be automatically deposited in our account. The SCCA would be pleased to offer a charitable tax receipt for amounts totaling over \$25/year.

More information can be found at www.sunshineccu.com/Personal/InOurCommunity/CommunitySupport/ChangeIt.



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“Helping Build a Greener Future”

Why the Narrows Inlet hydro projects should not go ahead

by Ken Holowanky

The Narrows Inlet hydro projects are not “run of river.” There will be blasting and tunnelling into the bottom of alpine lakes, which will drain them by up to 45 metres (150 ft). Dams will be built. A large part of the very visible Ramona waterfall will be diverted. Major road construction (never to be deactivated), wide clearcuts for powerlines and penstocks (never to be replanted) and permanent clearings for powerhouses will all be visible from as far away as Storm Bay. Narrows Inlet hydro is not a local “mom and pop” operation, as out-of-province AltaGas Ltd has acquired a large stake.

BC Utility Commission reports prove that the cost of these projects to taxpayers is not justified. Only a tiny amount of fossil-fuel-generated electricity will be offset. More supply is not needed at a time when BC Hydro reservoirs are overflowing during freshet. The risks far outweigh the benefits, especially when the risks are meant to satisfy an export market for power, to establish a means to trade carbon credits and to create profit for private corporations and investors. BC Hydro is severely handicapped, as it has to pay well above market rates for electricity from this and other IPPs, unfairly burdening the taxpayer both now and in the future.

The Tzoonie River is still recovering its pink, chum and coho salmon runs from past poor logging practices. Blue-listed coastal cutthroat trout are abundant in Ramona Creek and in the Tzoonie River and its tributaries such as Chickwat Creek. Drained water from the alpine lakes will be added to the natural levels of the rivers, meaning unnaturally high flows and associated bank erosion for every watershed that empties into the confines of Narrows Inlet. Previous projects by the same proponent have resulted in the sloughing of alpine lakeshore, with silt flowing all the way into Narrows Inlet from Tyson Lake.

Long-term job creation is a fallacy. Jobs for this project are often not locally sourced. And there are no guarantees that

NAFTA rules will not apply in the future. For instance, water used to generate electricity qualifies as an industrial good, and monies promised to local communities can be disallowed if they are found to inhibit a foreign corporation from making a profit. We are giving up control of public resources.

The Narrows Inlet hydro projects have already created a divide in community relations among Sunshine Coast residents. More animosity is sure to follow, as visitors to the inlet become aware visually of the huge scale of the development. The strategy to promote “green” energy needs to focus on conservation, a term you won’t hear from investors. In the future, will



The view down Narrows Inlet from the top of Ramona Falls.

Ken Holowanky photo

the only thing our children know of the Sunshine Coast’s fjords be gleaned from reruns of nature shows on big-screen TV? The Narrows Inlet area is pristine wilderness and easily accessible from nearby urban centres. It is a prime boating and kayaking destination. Salmon Inlet, right next door, is already industrialized and has existing power transmission infrastructure. Why corrupt Narrows Inlet for power that isn’t needed at a price we cannot afford?



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SCCA funded to study McNab Creek aggregate mine proposal

by Jeremy Valeriote

The SCCA has been granted intervenor funding in the amount of \$6,850 to participate in the environmental assessment of a proposed sand and gravel (aggregate) mine in the fan of McNab Creek, in Howe Sound. The Canadian Environmental Assessment Agency allocated a total of \$44,250 to eight applicants to support their participation in the federal assessment of the project. Others who received funding are the Future of Howe Sound Society, Cowichan Tribes, Musqueam Indian Band, Tsleil-Waututh Nation, Halalt First Nation, Hwlitsum Services Society and Métis Nation BC.

Burnco Rock Products of Calgary has submitted a project description to initiate the environmental assessment process, which will be coordinated by the BC Environmental Assessment Office. With recent changes to the *Canadian Environmental As-*



Howe Sound from Mt Elphinstone

Donna McMahon photo

essment Act by omnibus Bill C-38, the federal government's role in the EA process is not clear, but it will likely be harmonized with the provincial process. The project would also need rezoning to an industrial land use. The rezoning application has been received by the SCRD and will require public consultation.

The proposed project involves extraction of 30 million tonnes of aggregate, most of which would be used for concrete in Greater Vancouver. The material would be dredged, creating a pit that would remain flooded throughout the life of the mine. The annual production is predicted to be 1-1.6 million tonnes per year, with occasional "spikes" of up to 4 million tonnes, and a footprint of 70 hectares (173 acres). By comparison, the Sechelt sand and gravel mine produces 5 million tonnes per year on 250 hectares (618 acres) of land.

The project would include a processing plant to screen, crush and wash the material on the landward side of a tree buffer. It would then be put on conveyors for loading onto barges in Howe Sound.

Major concerns with the project were communicated to regulators during the initial consultation stage. These included:

Fish habitat. The project is not directly in the McNab Creek channel, and would likely only affect the creek if altered ground-

water conditions impacted instream flows, or if the creek jumped its banks during extremely high flows, redirecting water into the pit area. Although these types of channel movements are likely to occur over the long term within a fan of this type, there is no evidence that they have occurred recently; in any case, Burnco proposes to raise an existing separation dyke high enough to contain a 500-year flood, and thus attempt to isolate the mine from the creek in perpetuity.

Current salmon escapements in McNab Creek average around 500 annually, but historic data indicates this figure was 5,000 in the latter half of the last century, before large-scale forestry damaged the watershed in the 1970s. The SCCA's position is that new activity should not preclude reaching historic levels again in the future.

The McNab Creek fan currently hosts a groundwater-fed spawning channel constructed by previous owners in the 1980s. The channel was extended by Fisheries and Oceans Canada (FOC) in the early 2000s as compensatory habitat for activities associated with the Port Mellon mill. Indications are that the spawning channel has not been successful. Burnco proposes to relocate the channel, which will require FOC authorization. However, changes to the *Fisheries Act* by Bill C-38 mean that only "serious harm to fish that are part of a commercial, recreational or Aboriginal fishery" and "permanent alteration or destruction of fish habitat" are prohibited by law.

Additionally, several small watercourses are located in the area proposed for aggregate stockpiles; most of them have some salmon spawning activities, as well as cutthroat trout values. A reclamation plan to be submitted with the application will include a lake in the area of the pit, a strategy Burnco has used in the past.

Marine ecosystems. Some argue that with the closing of the Woodfibre mill and the remediation of the Britannia mine's acid- and metal-laden runoff, Howe Sound is only just beginning to recover from a century of industrial mistreatment. Whales and dolphins, for instance, have recently returned to the sound. A delicate ecological balance may be impacted by the installation of pilings on the foreshore, increased marine traffic and potential sediment loading into the sound. Groups opposing the project believe that approval of a large-scale industrial project should not proceed without comprehensive, strategic regional land-use planning.

Impacts of barge loading on the marine environment are not known. The proponent indicates in the project description that "no material from the pit will be disposed of at sea." At the Sechelt sand and gravel loading facility, however, indications are that a thick deposit of material has spilled from the conveyor.

Noise and light pollution. The electric clamshell dredge, loaders and conveyors will generate noise and light beyond the treed buffer between the mine and Howe Sound. At an open house in June in West Vancouver, Burnco indicated that it was anticipating operating hours of 7 am to 5 pm, but it was unclear whether these could be maintained during spikes of up to four times the average annual production. The proponent indicated that noise modelling would be a component of the environmental assessment.

Conservation. The SCCA wishes both to preserve the ecological capacity of Howe Sound and to return McNab Creek to its previous condition of natural abundance. It will seek to establish historical biodiversity values as the baseline used to compare potential impacts to the McNab Creek watershed.

SCCA members are encouraged to participate in the public process, communicate local knowledge, and voice their thoughts or concerns regarding this project.

Fisheries Sensitive Watersheds on the lower Sunshine Coast

A special habitat report from the SCCA

Historically speaking, the major rivers of the Sunshine Coast Forest District produced an annual salmon catch measuring in the hundreds of millions of kilograms, until the fishery began to decline sharply in the 1970s. The region's rivers also supported First Nation populations, very similar in size to the Sunshine Coast's current population, for at least 10,000 years. The salmon fishery, along with forestry, provided the foundation of wealth that built our contemporary society. The fisheries declined for several reasons: overfishing, hydroelectric dams and logging. Both the extent of logging and specific logging practices were responsible for massive environmental damage. Today, we urgently need to restore our fisheries.

When the province of British Columbia implemented the *Forest and Range Practices Act* in 2004, it created a new designation, that of the Fisheries Sensitive Watershed. Its purpose was to ensure that forestry activities do not compromise fisheries values in major fish-bearing watersheds. Unfortunately, by 2012 the government had only got around to designating six watersheds, none of which are in the Sunshine Coast Forest District. So the SCCA is going to prod them into action. With our Habitat Area Nomination Project, we are moving toward recognizing the work that needs to be done to restore the region's salmon rivers. The fisheries sensitive designation mandates consideration of the cumulative hydrological impacts of forestry, and it can result in changes to the pace



Salmon spawning on the Sunshine Coast. Tella Sametz photo

of logging, so that logging does not destabilize fish-bearing streams. The designation itself will not restore the fishery, but it's a necessary step along the path of ecologically responsible management and incremental recovery of populations.

Where did all the fish come from? As part of the HANP, we have been collecting historical data about fish spawning escapements in the region's major rivers. We take the view that peak escapements illustrate a restored system's ecological potential for producing salmon. The data can give us a rough idea of the benefits that society received in the past and might anticipate in the future.

On pages 8 to 10 of this issue of the SCCA newsletter we discuss in more detail four important Fisheries Sensitive Water-



The mouth of Chapman Creek, at Mission Point.

Tella Sametz photo

sheds located in the populous lower Sunshine Coast: Chapman Creek, Wilson Creek, McNab Creek and Dakota Creek. Some selected data illustrating historical and current salmon escapements is included; more comprehensive tables of data can be found on our website at www.thescca.ca. Also on the website is an overview of the HANP project, information on Wildlife Habitat Area nominations for marbled murrelet nesting habitat, a dynamic visual presentation on understanding biodiversity in

The designation itself will not restore the fishery, but it's a necessary step along the path of ecologically responsible management and incremental recovery of populations.

forested coastal ecosystems (like the Sunshine Coast), and important data concerning 14 other Fisheries Sensitive Watersheds in our region. Much of this information will be forthcoming in future issues of the newsletter.

The story that emerges from the data is that salmon fisheries—although radically degraded by poorly regulated land uses, primarily logging—are recoverable. We strongly believe that recovery is possible, and that the benefits of such recovery to society and the environment would be enormous.

Chapman Creek

Chapman Creek reaches the Strait of Georgia at Davis Bay in Sechelt and is thought to have been one of the largest salmon-producing streams on the Sunshine Coast prior to European contact in the mid-1800s. According to the draft 2007 *Strategic Land Use Plan* for the shishalh First Nation, this watershed has significant spiritual and cultural importance. It is also the source of drinking water for approximately 27,000 people. The will of the shishalh people and the Sunshine Coast Regional District



Logging damage on Chapman.

Daniel Bouman photo

for the management of this watershed is expressed in the Joint Watershed Management Agreement of 2005.

Since 1947, peak escapements for coho, pink and steelhead have numbered in the hundreds. The peak number for chum was 3,500 spawners in 1973 and again in 1974. It is likely that the numbers for pink and chum were much higher before the main creek mouth at the Wilson Creek estuary was diverted to its present outlet at Davis Bay in 1936.

Between 1967 and 1992, extensive logging and road building over unstable slopes caused more than 300 landslides and road failures, which impacted both drinking water quality and fisheries values. An Integrated Watershed Management Plan was completed in 1998 but never implemented.

Chapman salmonids have also been negatively impacted by SCR D water withdrawals during late summer low-flow periods. A Coastal Watershed Assessment Procedure was completed by

International Forest Products (Interfor) in 2000. The company investigated the effects of past forest practices and provided recommendations for future forestry development. Also that year, Chapman Creek was one of only 15 streams designated as sensitive under the BC Fisheries Protection Act. Interfor abandoned this chart area in 2002.

Salmonid escapement figures for Chapman Ck

	Coho	Pink	Chum	Chinook	Totals	Steelh'd
1947	75	750	1,500	-	2,325	75
1967	0	50	100	0	150	-
1973	0	100	3,500	0	3,600	200
1975	75	25	200	0	300	200
1977	-	0	2,500	0	2,500	-
1980	50	0	500	0	550	-
1982	-	0	20	0	20	-
1983	50	-	400	0	450	-
1987	0	70	750	0	820	-
1989	175	100	100	-	375	-
1994	375	500	750	50	1,675	-
1997	550	200	200	70	1,020	-

Rainbow trout and Dolly Varden were introduced before records were kept; coho and cutthroat were stocked in the late 1980s. Beginning in the early 1990s the Sunshine Coast Salmon Enhancement Society stocked pink, chum, coho, cutthroat and steelhead, and introduced chinook. The stocking of cutthroat was discontinued to ensure the survival of salmon fry and smolts. The Greater Georgia Basin Steelhead Recovery Action Plan of 2002 identified the stock status of both winter and summer steelhead runs as a special concern. In 2004, during an enumeration of steelhead, a total of only two adult cutthroat were observed.

Chapman Creek is now regularly stocked with salmon fry. Returns have been disappointing, and it is not clear that there are any wild, self-sustaining salmon stocks left in this watershed.



Lower reaches of Chapman Creek.

Tella Sametz photo

Wilson Creek

The Wilson Creek watershed, located partially within the District of Sechelt, is adjacent to the much larger Chapman watershed.



Wilson Creek close-up.

Ross Muirhead photo

The creek reaches the Strait of Georgia at the shishalh First Nation’s Tsawcome reserve. Its estuary was once also the outlet of Chapman Creek. Wilson Creek is considered to have very high fisheries values, with 3.5 kilometres of salmon spawning reach and more than 16 kilometres of fish-bearing habitat in the main stem alone. The creek supports spawning chum and coho. It has traditionally hosted steelhead and significant populations of both sea-run and residential cutthroat trout. Wilson Creek is used by Fisheries and Oceans Canada (FOC) as a reference stream for estimating coho returns in Georgia Strait.

The Wilson watershed is relatively stable and gently sloped but it is beset with problems. The estuary has been degraded, and residential and agricultural uses have compromised the lower spawning reaches. Logging on Crown and privately managed forest lands have radically altered the watershed’s forest cover and hydrology. Numerous logging roads traverse the slopes, sometimes moving water to adjacent watersheds and

sometimes bringing water in. There is very little old growth left, and younger age classes dominate throughout.

The history of escapements indicates that the watershed functions at far below its potential for fisheries. The peak year on record was in 1948, with 750 coho and 750 chum returning. A more recent peak year was 1984, when 200 coho and 500 chum returned. The last official data from FOC archives shows that 30 coho, 150 chum and no steelhead returned in 1989. Sources indicate that recent returns have remained “flat.”

Wilson Creek was the first stream on the Sunshine Coast to have a hatchery (1982). It was managed by the late John Hind-Smith for the Sechelt Rod and Gun Club. There were various stocking efforts during the 1990s. Some backwater channels for over-wintering coho were established in 2004. The Ministry of Forests halted Crown land logging in 2002, pending completion of a coastal watershed assessment. Sechelt Community Forest is the current tenure holder of the Crown land in this watershed and has recently completed a detailed watershed assessment (see www.sccf.ca). Privately managed forest landowners are not obliged to consider the state of fisheries or the overall condition of watersheds while conducting their operations.

Salmonid escapement figures for Wilson Creek

	Coho	Pink	Chum	Sockeye	Totals	Steelh'd
1948	750	-	750	-	1,500	25
1951	400	-	-	-	400	-
1972	-	-	60	-	60	-
1975	75	-	25	-	100	25
1977	50	0	300	0	350	-
1980	100	0	250	0	350	-
1983	75	0	400	0	475	-
1985	75	0	350	0	425	-
1988	0	0	500	75	575	-
1989	30	-	150	-	180	-

McNab Creek

McNab Creek empties into Howe Sound a few kilometres northeast of the pulp mill site at Port Mellon. The known historical maximum escapements are 200 coho, 3,500 pink and 1,500 chum. It is believed that McNab Creek supported much larger runs in the earlier part of the past century. McNab Creek also supports significant populations of both resident and anadromous (sea-run) cutthroat trout.

McNab Creek has been logged extensively over the past century. In 1997, an unsuccessful plan was proposed to build a liquefied natural gas storage facility on the west side of the creek, drawing gas from a pipeline that runs through the north-

west portion of the watershed. A Fish and Fish Habitat Inventory (1999) noted that McNab still contained important spawning and rearing habitat for anadromous salmonids, cutthroat and steelhead. Howe Sound was closed to commercial fishing in 1963 in order to manage stocks and preserve the sports fishery. McNab was identified as one of three creeks with fairly gentle slopes on the west side of Howe Sound that had significant estuaries (there being none on the east side). Along with the Squamish River, these streams were deemed to have significant capabilities for supporting fisheries in Howe Sound.

Between 2001 and 2003 a groundwater-fed spawning channel paralleling McNab Creek was built as part of a deal

continued on page S4

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McNab Creek

allowing Howe Sound Pulp and Paper Ltd to dredge in the Rainy River. In 2002, 30 mineral claims were granted along the lower main stem of the creek. Shortly thereafter, an aggregate mining project was proposed with a normal production capacity of



Aerial view of McNab Creek.

Tella Sametz photo

more than 1 million tonnes per year (spiking to a maximum of 4 million). This capacity triggered the participation of FOC in a federal environmental assessment. The Canadian Environmental Assessment Agency remains responsible for conducting the comprehensive study of this project. A private run-of-the-river project for McNab Creek was submitted to the province in 2010. It has an expected operational date of 2013.

Recent maximum escapement data for this watershed is scarce: 300 chum for the period 1988 to 1997, 40 coho for the period between 1985 and 1994. Nonetheless, McNab Creek is considered a major chum system within the Howe Sound/Sunshine Coast area, with an escapement goal of 10,000 (2009).

Salmonid escapement figures for McNab Creek

	Coho	Pink	Chum	Chinook	Totals	Steelh'd
1951	0	3,500	1,500	0	5,000	-
1961	0	25	25	0	50	-
1971	150	0	150	0	300	-
1976	25	0	75	0	100	-
1983	100	0	300	0	400	-
1989	40	-	0	-	40	-

Dakota Creek

Dakota Creek empties into Howe Sound just north of the pulp mill site at Port Mellon. We consider this relatively small creek to be regionally significant because of its historic capacity to produce large numbers of cutthroat and steelhead trout. There is a high degree of conservation concern for anadromous (sea-run) coastal cutthroat stocks in the Lower Mainland region, as these have been in steady decline for many years.

Dakota Creek was never known to support large salmon returns; escapements were not even counted until 1971. However, a 1979 study found that the creek was one of five key Georgia Basin streams accounting for 61 percent of cutthroat production in the Lower Mainland. A 2005 cutthroat recovery discussion paper also noted the significance of Dakota Creek.

A 2000 Coastal Watershed Assessment Procedure found ten pairs of coho. The annual mean for chum between 1988 and 1997 was 110. In 1973, sampling identified rainbow and cutthroat trout; the latter were stocked twice in 1989 and 1998. The steelhead population present in 1980 was still surviving in 1996, when 468 were counted.



Dakota Creek is key for cutthroat trout.

Soren Bech photo

Industrial activity began early the last century. By the 1930s, a series of dams and flumes were in use to move cedar cants, and a mill was established. In 1971 Canadian Forest Products Ltd acquired the drainage as part of their tenure. There are four unused water licences held by the Sunshine Coast Regional District, and the watershed is designated as a community watershed under the *Forest and Range Practices Act*. An initial watershed assessment procedure was conducted in 1995; a second CWAP identified much of the terrain as naturally unstable. Over the past 40 years, human-caused slope failures have been an important part of sediment loading in the creek. An abandoned gravel pit was identified as draining an estimated 300 tonnes of sediments annually.

The Dakota estuary and lower reaches are considered to have high fisheries values. Also of note is the fact that Dakota Creek is one of several streams between Langdale and Port Mellon that are significant for cutthroat trout. These include Avalon, McNair, Oulette, Twin and YMCA creeks.

Community Forest logging still threatens Wilson Creek watershed

Guest submission by Elphinstone Logging Focus

Elphinstone Logging Focus continues to have serious concerns that the Sunshine Coast Community Forest is not addressing real threats to the Wilson Creek forest and its watershed. Proposed cutblock #EW002 is one of the last large pieces of intact forest in the entire 2,207-hectare watershed. It also forms a key portion of the western part of the proposed 1,500-hectare lower elevation Mt Elphinstone Provincial Park. Due to mounting public concerns, the SCCF placed the cutblock in deferral “in order to study various proposals and suggestions made regarding this area,” according to a May 2011 press release.

“The recently published *Wilson Creek Watershed Assessment* has several shortcomings due to a lack of historic data,” said Ross Muirhead of ELF. “To start with, it only considers one area of interest: fish habitat and water quality. There is no clear assessment of the effects of the proposed logging on the forest itself, the main focus of public concern. Regarding water quality, critical points such as changes in water temperature and fine sediment deposits that affects salmon mortality are not looked at.”

“Peak flow recording is taken from the Roberts Creek water station and then compared to Wilson Creek watershed, to see if there are changes over time, even though each watershed has different forest cover histories. A recently identified landslide found adjacent to proposed cutblock EW002 is not properly analyzed in the report. We need to know how much more material will erode at this location,” Muirhead continued. “This is a huge source of fine material being deposited downstream onto salmon spawning beds. All measures must be taken to protect streamside stability, including full protection of the surrounding forest.”

It is well documented that the Wilson Creek watershed has been heavily logged in the past. Massive clearcuts by CNI and Western Forest Products in 2007 were mostly in the watershed. Hans Penner of ELF states that “it’s the older natural forest types, as found in cutblock EW002, that provide the best water absorption—ie, filtration and stream bank protection. This forest is also critical for the habitat of such threatened species as the red-legged and coastal tailed frogs, as well as many other species of plants and animals.”

In its May 2011 press release, the SCCF quoted the mayor of Sechelt saying that “Sechelt Council supports . . . management .

. . . based on detailed research and science about the best way to maintain a healthy forest environment in this area.” There are still many unanswered questions on how to achieve that objective.

The author of the *Wilson Creek Watershed Assessment* recommended that “SCCF develop a long term plan to achieve distributed forest stand ages across its holdings, in conjunction with the timber harvesting plan. Since forest planning extends over decades it may take some time to achieve this.”

The SCCF’s licences (including Wilson Creek watershed) are mostly in “compromised,” low age-class forests. Only 14 percent of the watershed is in a natural forest condition (ie, higher age classes), and it is imperative to maintain such older stands as the



Wilson Creek forest veterans. Elphinstone Logging Focus photo

Wilson Creek forest. To log them seems to run contrary to the stated objective of achieving “distributed forest stand ages.”

We expect Sechelt council and the SCCF to honour commitments made in 2011 to address community concerns about these forestry issues. The logging deferral in the Wilson Creek forest must be maintained until the proposal to manage the area as a park or protected forest zone has been fully considered.

To help protect the Wilson Creek forest, please email Sechelt’s mayor and council at council@sechelt.ca. Cc your letter to the Sunshine Coast Community Forest at info1@scf.ca. To view a video on this forest protection campaign, and for more analysis, please go to www.loggingfocus.org.



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Message from the chair

by Jason Herz, SCCA Chair

Here in the chair's seat at the SCCA it has been a year of steep learning curves. With the departure of long-time executive director Daniel Bouman—whose experience in protecting all things biodiverse is vast—the board has had to rise to the challenge of filling some rather large shoes. My compliments and thanks go out to all our directors for stepping up and putting in considerable extra effort in keeping the SCCA an effective voice for biodiversity on the coast. We reached out to many in our community for their expertise and energy in addressing the environmental concerns that continually arise in the Sunshine Coast Forest District. And we continue to look for people who can advise us on specific issues that, unfortunately, still have the potential to adversely impact biodiversity in our region. Contact the chair@thescca.ca if you would like to help.

*We hope to see you all on
November 17, 2012, at the Roberts
Creek Community Hall for the SCCA
Celebration of Conservation*

For those less conversant in the sciences, we would love to have you help us with our many other activities. Contributing to this newsletter, for example, or organizing our community events and expanding our outreach, or fundraising and grant writing. Just to name a few. To keep this organization vibrant and active in the community, we are always in need of folks with a variety of skills. If you are interested in putting your abilities to work for the environment, contact the office@thescca.ca and sign up.

Many of our current projects are described in this newsletter. Here are a few other issues we're working on:

Cliff Gilker Park covenant. After putting significant time and energy into the Cliff Gilker Park covenant, it seems we have arrived at a crossroads. It's been challenging to develop language for this covenant. The park hosts many different activities and users, and the SCRD parks department must work in and maintain the park despite considerable pressure from those who love it so much. We still hope to develop a long-term solution for the park's protection, be it in the form of a covenant or an alternative

model. The effort is ongoing. Our thanks to all the participants: Judy Skogstad, Lois Potter, SCRD Director Donna Shugar, SCRD Community Services Manager Paul Fenwick, SCRD Parks Manager Carleen McDowell and many others who participated.

Gambier Island nature reserve covenants. The SCCA, through the efforts of the Islands Trust Fund and in partnership with the Gambier Island Conservancy, is still in the process of finalizing conservation covenants on three nature conservancies on Gambier Island. The language of the covenants is all but finalized, and the master plans and baseline studies have been agreed to. Obtaining what is known as a "statutory right of way" is our next hurdle. This should only be a matter of filing an application and being granted permission by the province. How hard could that be? Hopefully, it will all come to completion this fall. When you next have some free time and a desire for a hike, head over to Gambier, enjoy the views from the top of Mt Artiban and experience a walk through the mature primary forest on the mountain's southern slopes. Our thanks again to the many people who helped protect these wonderful nature reserves in perpetuity: Peter Scholefield and the whole Gambier Island Conservancy group, Kate Emmings of the Islands Trust Fund, and Judy Skogstad and Lois Potter for invaluable assistance.

Mount Elphinstone Park expansion. The creation of a park on the lower slopes of Mt Elphinstone has long been a goal of the SCCA and the community of Roberts Creek. A 1,500-hectare area—initially proposed in 1983 when disastrous slides occurred in the area as a result of clearcuts—was put forward by the Federation of BC Naturalists in 1996. To the dismay of all involved, only three tiny parcels (a total of 139 hectares) were protected as Mt Elphinstone Provincial Park. Leap forward to 2012, when once again the community is stirred into action by the assault on the forests of lower Elphinstone by our own community forest company (SCPI), Island Timberlands, BC Timber Sales and others. The SCCA will continue to work toward the protection of this area, which is notable for its rich biodiversity and recreational values.

Mount Richardson Park. We are working with the Ministry of Environment and BC Parks to resolve an issue of unlicensed activities occurring along the foreshore of Mt Richardson Park and to initiate a long overdue management plan to protect biodiversity values. The SCCA opposes the location of commercial operations in our small coastal protected areas (which make up less than three percent of the Sunshine Coast).

I hope to see you all on November 17, 2012, at the Roberts Creek Hall for the SCCA Celebration of Conservation.

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2013 SCCA Calendar now available

The **2013 SCCA Calendar** is ready to delight you! Alan Sirulnikoff, Allan Forest, Frank Thorburn, Don Klan and Carl Olsen



Pacific white-sided dolphins on the 2013 calendar cover

Carl Olsen photo

were chosen by a jury to showcase their breathtaking images this year to celebrate the *Beauty and Biodiversity* of the Coast.

Funds raised by calendar sales help the SCCA preserve biodiversity on the Sunshine Coast. Each calendar sells for \$20.



Sheenah Main from the SCCA with the Halo Seaward kayak.

Otherwise, you can get five for \$80, or ten for \$150. Calendars will be on sale at the Celebration of Conservation at the Roberts Creek Hall on November 17, as well as at various retail locations.

We are now putting out a call for images for the 2014 Calendar. The theme is *Rare Species and Spaces on the Sunshine Coast*. Visit our website at www.thescca.ca to find out how to generously submit your images for the 2014 calendar and for a detailed list of places where you can buy the 2013 calendar.

Join us to celebrate conservation

The SCCA is hosting this year's **Celebration of Conservation** at the Roberts Creek Community Hall, 1309 Roberts Creek

Road, on November 17, 2012, at 7 pm. Tickets, available at the door, are \$15 for adults and young people over 12, \$5 for ages 6 to 12, and free for those 5 and under. Families are very welcome!

The Celebration is a great way for SCCA members, their friends and families, and the entire community to have fun and honour the natural beauty and incredible biodiversity of the Sunshine Coast. Folks from SCCA member groups, including the Iris Griffith Centre, Friends of Gospel Rock, Day Road coalition and One Straw, will also be attending.

Come out and enjoy delicious appetizers, drinks at the cash bar and wonderful music by Sweet Cascadia, Brothers in Farms, Dan's Daughters and other local talents. There will be great door prizes from local merchants, and the winning raffle tickets will be drawn for the Seaward Halo kayak and other terrific prizes (see raffle details in adjacent article).

We hope to see you there! For more information, please contact events@thescca.ca or visit

Win a Halo Seaward kayak & more

This year the Sunshine Coast Conservation Association is raising funds by raffling tickets for a thermoform Halo Seaward kayak that Shannon Reid from Halfmoon Sea Kayaks picked up for us at cost. It is a 13-foot (4-m), 46-lb (21-kg), red kayak that retails for about \$1,800. First prize also includes a night at Egmont's West Coast Wilderness Lodge.

Second prize is two Helly Hansen waterproof jackets kindly donated by Patrick Mark. The men's jacket is a beautiful green Zeta performance shell, while the women's version is a lovely lilac Tofino shell.

Third prize is a one-night stay for two in a two-bedroom suite, with a fireplace, kitchen, water view and private balcony, at the Painted Boat Resort at Madeira Park.

The lucky winners will be announced at the Celebration of Conservation held at the Roberts Creek Hall on November 17.

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For more information about the SCCA—and to view this newsletter in full colour—please visit our website at:

www.thescca.ca

2012 John Hind-Smith Award

With a mandate to protect biodiversity in the greater Sunshine Coast region, the SCCA established the John Hind-Smith Award in 2006. The award honours a worthy local citizen who, through his or her dedication to the environment and to preserving wild-life, exemplifies the spirit of John Hind-Smith.

John was a native of Yorkshire who came to the Sunshine Coast in 1960, worked at the mill and then ran his own business until 1985. His real passion, though, was for nature, and John hiked extensively around Mt Elphinstone and the Tetrahedron. He freely shared his vast knowledge of our ecosystem and was a lifetime member of the SC Natural History Society, conservation director for the Gibsons Wildlife Club, and a founding member of the Salmon Enhancement Society, Tetrahedron Alliance and other groups. John was instrumental in having the Tet preserved as a provincial park. A beautiful sub-alpine lake in the park bears his name.

The 2012 recipient of the JHS Award is Eagle Walz, of Powell River. Eagle has provided exceptional environmental leadership on the northern Sunshine Coast for more than 20 years. Recently, he initiated a Backcountry Access Roundtable that successfully persuaded Plutonic Power Corp to restore public access to wilderness recreation areas. He also served on the Community Advisory Group for Stillwater Timberlands.

Eagle is probably best known for his enormous involvement with the Sunshine Coast Trail, a scenic 180-kilometre route that connects Saltery Bay to Sarah Point and now boasts seven overnight huts, with more in the making. He is the author of several books, a founding member of the Powell River Parks and Wilderness Society and Outdoor Recreation User Groups, and an active proponent of park development and LRMP participation.

Please join us in congratulating a deserving award recipient!

We are seeking nominations for the 2013 JHS Award.



From left to right: Eagle Walz, 2012 John Hind-Smith Award recipient; Jason Herz, SCCA chair; David Moore, SCCA director.

Sunshine Coast Conservation Association

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MEMBERSHIP RENEWAL

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The purpose of the Sunshine Coast Conservation Association (SCCA) is to preserve the natural biodiversity of the Sunshine Coast region for the present and future benefit of humanity and all life.

As a member of the SCCA, I accept its purpose as stated above.

Signed: _____ Date: _____

Please mail cheque or money order with this completed application to: SCCA, Box 1969, Sechelt, BC V0N 3A0
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Sakinaw sockeye stocks once on the brink, now making a recovery

by Margot Grant

A record number of sockeye smolts have left Sakinaw Lake this year. According to a Fisheries and Oceans Canada (FOC) estimate, more than 163,000 migrated out to sea, the highest number in 15 years. The survival rate of the fry was very high, as well: 11.8 percent. The previous high smolt count was in 2010, with about 70,000 individuals. Last year, 32,887 smolts passed the fence.



A kayaker's perspective of Sakinaw Lake.

Tella Sametz photo

The number of adults returning to the lake this year was lower than last year. Between July 13 and August 20, 2012, FOC crews counted 239 sockeye. Last year, 554 came back. (The number of smolts leaving the lake is not a clear indicator of the number of adults that will return.)

At the narrow entrance to the lake, the fish swim into a submerged box with a camera and are counted as they are released in batches. There were so many smolts this year that between May 6 and May 29, FOC crews worked night shifts. They were busy: during the night of May 12, for instance, a total of 19,458 smolts went through the box.

Sakinaw sockeye were once on the brink of extinction. Between 1957 and 1990, the average number of adults returning was 4,600 per year. Some years, as many as 15,000 came back. But in 2001, only 87 were counted; in 2002, 78; in 2003, three; and in 2007 and 2008, not a single sockeye was seen. In 2009, there was one and by 2010, there were 29. The numbers then suddenly went up to 554 last year and 239 this year.

Sakinaw sockeye are unique; they are the last lake-spawning sockeye in the Georgia basin, and they have distinctive genetic and biological characteristics. Compared to other sockeye, they

stay in the lake longer before they spawn. They weigh about five pounds (2.25 kg); the females lay fewer eggs than other sockeye. Sakinaw sockeye are lakeshore spawners, using five specific beaches in the lake.

The sockeye seem to be doing well once they are back in the lake. "Based on our observations last year, we are expecting most of the [239 returning] sockeye to survive until they're ready to spawn," Steve Baillie, head of salmon stock assessment in the Georgia basin, said in an email. "Most of the spawning takes place at two beaches—Sharon's and Haskins. We will put divers into the water to clear debris, count spawners and mark redd locations."

Last year, spawning took place in November and divers followed developments closely. According to a Nov 14, 2011, email from FOC, "Fish are now on the spawning beaches and starting to dig redds. The males are now defending the redds which allows us to get very close (2-4 feet) to observe. The sockeye are once again using the same areas as in previous years. They are digging up last year's markers These captive brood fish so far have found the lake, the beaches and the locations to dig the redds."

"Pretty amazing, considering their parents spent their entire lives in a hatchery," said Daniel Bouman, former executive director of the SCCA.

FOC started to release fry in Sakinaw Lake in 2006. That year, 97,471 were let go—all offspring of captive Sakinaw sockeye that were reared at Rosewall Hatchery on Vancouver Island. In 2008, the release figure went up to 420,000, resulting in the 554 that came back in 2011. Last year, 1.4 million fry were set free, resulting in the 163,000 smolts from the captive brood and the 29 adults who spawned naturally.

This year, FOC released approximately one million fry in Sakinaw Lake. They all had their adipose fins clipped, so in the spring of 2013 it will be possible to differentiate between hatchery smolts and the smolts from about 500 adults that spawned naturally in 2011. FOC could not say if, or how many, fry will be released in 2013.

For more information, go to www.thescca.ca, then click on "HAN Project," "Fisheries" and "Sakinaw Lake."

What in the Wild Wonderful World?

Clockwise from top left: 1) A **fin whale**—the second-largest animal in the world, after the blue whale—was seen in Georgia Strait in September 2012 for the first time in recorded history. *Simon Barrette photo, Wikimedia Commons* 2) A **canvasback**, a less-common coastal duck. *Carl Olsen photo* 3) **Pinesap**, a forest plant known as a saprophyte, which has no chlorophyll. *Rick O'Neill photo* 4) **Western painted turtle** populations are in decline on the Sunshine Coast. *Carl Olsen photo* 5) **Oregon ensatina**, a species of salamander. *Tella Sametz photo* 6) **Northern waterthrush**, a new species sighting for the Sunshine Coast. *Penny Hall photo* 7) **Indian-pipe**, another saprophytic species. *Rick O'Neill photo* 8) The strange, scaly bark of the **Pacific yew**. *Tella Sametz photo*



What in the wild wonderful world?

See the
bottom of
page 15
for photo
credits and
further details

