



Northern Spotted Owl Breeding Program 2016 Update

OUR NEWEST CAPTIVE BORN SPOTTED OWL

For those of you who don't know us, we are the Northern Spotted Owl Breeding Program and our goal is to restore the wild population of BC Spotted Owls through captive breeding and release. We are a small team of dedicated biologists working 365 days per year at our Breeding Centre in Langley to help ensure this iconic West Coast species does not become extirpated from its native habitat in Canada. The 32 resident owls we care for will serve to help us reach our goal either through breeding or by being released into habitats protected for the species.

Second Generation Success

The 2016 breeding season marked a major milestone for the Northern Spotted Owl Breeding Program: the beginning of a second generation! Shania was Canada's first captive bred Spotted Owl born in 2008 to parents Shakkai and Einstein. In 2016, at the age of 8, Shania and her mate Scud performed all the right pair bonding behaviours throughout the breeding season and produced two eggs. Both eggs were artificially incubated, but only one was fertile. This

fertile egg was labeled "Egg E" and underwent a fairly uneventful (which we were thankful for!) 32 days of incubation. The chick finally made its first crack through the shell on April 19 and after 88 hours of hatching (the longest we've ever had!) a brand new Spotted Owl was welcomed into the world on April 22.

After 10 days of hand-rearing by the breeding team, "Chick E" was fostered to its grandparents Shakkai and Einstein. We thought Shania was about to lay a second clutch of eggs and so the decision was made to give the experienced pair of Shakkai and Einstein the new chick in the hopes of getting more eggs from Shania.

Chick E grew up quickly before our eyes and continues to remain close to "mom" Shakkai. A vet checkup at two months of age revealed that this young chick was as healthy as could be, and a male! He will be separated from Shakkai and Einstein in the fall to begin his life as an independent juvenile male and eventually be introduced to a female when the time comes. Who knows? This could be the start of a third generation!

The birth of Chick E marks such an important milestone for us. The Program began with two pairs made up of 3 mature owls and one young male that were brought in from the wild. But now we know that captive bred Spotted Owls are also able to pair bond, reproduce, and rear young very much the same as if they were born in the wild. We also

learned that it can take a long time for a female Spotted Owl to be sexually mature enough to accept a mate. Within our resident Spotted Owl population, 5 out of 7 of our females are under the age of 8, which means that in the upcoming years we can expect more and more females to become mature and see an increase in the number of chicks we are able to produce in captivity.

Although Shania and Scud did not raise their own biological offspring this year, they were given the opportunity to raise a Barred Owl chick once it was determined Shania would not be laying any more eggs. Raising a Barred Owl was good practice for this inexperienced pair and both parents followed their natural instincts and raised a very healthy and robust chick. Shania was a natural mother; her captive upbringing having no effect on the behaviours she instinctively knew. Next year, we are confident that Scud and Shania will continue to produce fertile eggs and it is our hope that we will be able to return their own biological chick to them, or maybe even two!

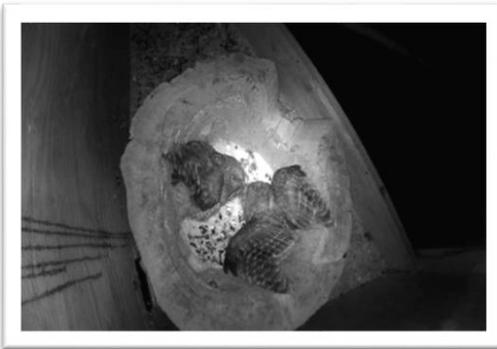
Thanks to the addition of Chick E and one wild juvenile that was captured to add to our breeding population, our number of Spotted Owls has grown from 15 to 17 this year!

To see chick E grow up in pictures, visit our Facebook page at www.facebook.com/nsobreedingprogram



Hello World!

Nest cameras allowed us to keep a close eye on the chicks as they grew up in the nest over the course of about 3 weeks before fledging.



Night Vision

Infrared night vision let us watch 24 hours a day as pairs interacted with each other, cared for their eggs and chicks. Owls are nocturnal and are most active at dusk and dawn, so being able to see the owls in the dark was critical for our biologists.

Installing Cameras

Thanks to Funds provided by
TD Friends of the Environment

In October of 2015 we were successfully awarded a TD Friends of the Environment (TD FEF) grant which provided funds to purchase night vision cameras for our breeding centre. We installed aviary cameras for a wide view of the large flight enclosures of breeding pairs, as well as one camera above every nest site. The aviary cameras allowed us to monitor the behaviours of pairs throughout the breeding season - most importantly during the early courtship stage of the breeding season. We introduced 4 new pairs to each other this year and were very excited to be able to watch two pairs progress towards forming a pair-bond, with one pair successfully becoming bonded. The male was seen bringing food to the female over and over again until she finally accepted him.. A pair we were hopeful for at the beginning of the season did not get along very well. The cameras allowed us to see that they were ignoring each other or defensively chasing each other around the enclosures and now we know to try them with different mates next year.

The nest cameras were absolutely amazing. We were able to watch as the females selected a nest and began preparing it, creating a divot (a behavior called "cup forming") with their bodies for the egg. We saw each egg laid live on

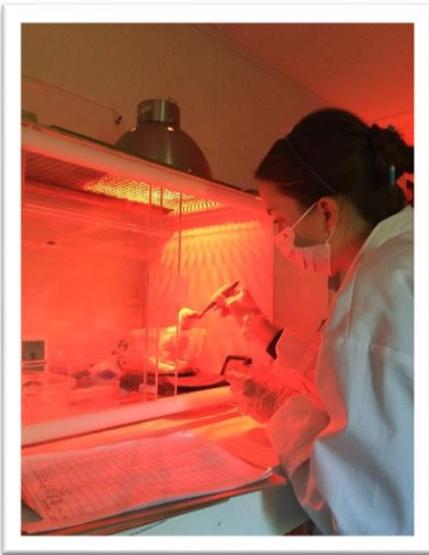
camera, day or night, and were able to act instantly to retrieve it and begin artificial incubation. In the past, we would just assume a female was in the nest if we were unable to locate her during daily checks and then had to wait all day and night for her to leave the nest so we could check for an egg. The nest cameras allowed us to see if she was in the nest and if she had indeed laid an egg. Although we know that Spotted owls typically lay two eggs three days apart, occasionally the females would surprise us by laying eggs late, or by laying a third egg. Being able to see inside the nest meant we were able to minimize the number of times we disturbed the nest to check for an egg that may or may not have been there.

After the chicks were returned to the nest, we were able to monitor the progress of the growing chick 24 hours per day. Luckily all 2016 chicks were healthy and developed normally, but if there had been a problem we would have seen it right away. The chicks remained in the nest for about three weeks before they begin trying out their wings and exploring the world outside the nest. The aviary cameras allowed us to see each chick's first flight, first hunt, and the classic owlet head bob. We now have a better understanding of when to expect certain behaviours from fledglings, which will help us immensely in the future. The addition of the night vision nest and aviary cameras changed the way our biologists were able to observe and react to the owls' behaviours. For next breeding season, we are planning on installing even more cameras and allowing the images to be viewed online so that the public can experience the excitement with us. But until then, we have hundreds of hours of camera footage to go through and analyze. We hope to be able to predict when a female will lay the first egg of a clutch based on the amount of time she spends in the nest and determine which areas of the aviaries are preferred spots for copulation. This knowledge will help us to minimize disturbance close to egg lay and improve our aviary design.



**TD Friends of the
Environment
Foundation**

Fish and Wildlife Compensation Program Sponsored Internship



2016 was the 4th consecutive year that we have offered a Breeding Season Internship to recent university or college graduates. This Project is funded by the Fish and Wildlife Compensation Program (FWCP). The FWCP is partnership between BC Hydro, the Province of B.C., Fisheries and Oceans Canada, First Nations and public stakeholders to conserve and enhance fish and wildlife impacted by the construction of BC Hydro dams. Thanks to the grant awarded by FWCP, the funding for our internship program was completely covered this year. As the only facility in the world breeding Spotted Owls, we feel that there is a great opportunity to pass along skills and knowledge to up-and-coming biologists.

The search for qualified candidates begins in December and successful applicants begin work in February. They remain with the program for up to six months. As February also marks the beginning of the breeding season, the interns have much to learn in a short period of time. They learn all about the daily operations of managing a captive breeding program, including interpreting owl behaviours and calls, feeding the owls, maintaining a healthy rodent prey colony, as well as lots of cleaning to prepare our Incubation Room for when eggs arrive in March. Many of our past interns have said that observing the owls' behaviour is where they learn the most in the first few weeks. At this time of year, the owls are beginning courtship behaviours and interns, along with our biologists, spend every evening at dusk remotely monitoring the owls via aviary cameras or sitting outside listening to the owls. Once eggs start arriving in March the interns become very involved



with the artificial incubation process - learning how to read and use our incubators, handle, candle and weigh the eggs. This is a very exciting time of year as each egg is extremely valuable and reveals itself to be fertile or not after about 7 days of incubation. After 32 long days of incubation and up to 88 hours of watching the chick slowly break free of the egg, interns work shifts at all hours of the day and night to keep constant watch over the chicks, who are extremely fragile the first few days after hatch. Interns assist our biologists feed and weigh the chicks up to 4 times per day. Constant monitoring of the chicks means watching for and cleaning up after poops and ensuring that an ideal temperature is maintained. The chicks are handraised by our biologists for about 10 days. At this age the chicks are able to stand on their own and are beginning to open their eyes, (and have tripled in size!) so it is vital that they are returned to an active Spotted Owl nest to prevent imprinting on humans. At this point in the breeding season the interns closely monitor video from our nest cameras to make sure the chicks on the nests are developing normally and that the adults are providing them with enough food.

We have incorporated a field component to the internship that gives the interns a better contextual understanding of why each Spotted Owl born in captivity is so important. When all the captive born chicks have been returned to nests, the interns conduct field surveys with a Government biologist in various old growth habitats throughout British Columbia.

The interns also participate in our education and fundraising efforts to



provide them with an even more well-rounded experience when they leave us. Whether it be talking to kids at nature festivals, leading tours on site, or applying to grants, the interns get the chance to share what they have learned with a wide range of people. This year marked the first time that our interns took on some new fundraising efforts. The Adopt an Egg campaign that we ran in the spring to coincide with both our breeding season and Easter was organized and run by our interns. They enjoyed sharing week by week info about our developing eggs with the donors. They also spearheaded our fundraising Pub Night - organizing the silent auction and door prize draws themselves.

At the end of the 6 months the interns leave us armed with a unique set of skills, important knowledge that is transferable across many disciplines of biology, invaluable connections and references that will help to kick-start their careers in an increasingly competitive field. Over the years we have seen a noticeable increase in interest for the internship program and hope that as the number of owls on site grows, the Internship Program will grow as well. The British Columbia Conservation Foundation gratefully acknowledges the financial support of the Fish and Wildlife Compensation Program for its contribution to the Northern Spotted Owl Captive Breeding Program.



Breeding Barred Owls for Research

Most people don't know that here at the captive breeding centre we don't just breed Northern Spotted Owls, but Barred Owls as well. Although it may seem counter intuitive to breed the invasive Barred Owl that is competing with the Spotted Owl for resources and territory, the reason is quite simple: science. Barred and Spotted Owls are closely related species both physiologically and phylogenetically, as they both belong to the *Strix* genus. As such closely related species, we can learn a lot about the Spotted Owl by having the more abundant Barred Owls bred in captivity as well.

In 2012 three pairs of Barred Owls were removed from Spotted Owl territory in BC and brought to our captive breeding centre. Beginning in 2014 all eggs laid are immediately grabbed up by our biologists and put into our incubators following the same procedure we've established for Spotted Owl eggs. Now for the science. The Barred Owl eggs are run through the exact same incubation process under the same parameters as the Spotted Owls eggs to help us test our methodologies and refine our techniques. These eggs taught us that Barred Owls are more hearty birds even before they hatch!



We got the chance to practice our hand-raising techniques on two Barred chicks that first year. The male chick, also the more robust of the two chicks, was trained by staff to be an imprinted, glove-trained bird. Training started right away with the little chick going everywhere our biologists went, down to sitting on the couch watching tv! When he was old enough to try his wings the real training began - teaching him to fly to the glove for food several times per

day. We named that young male Forrest and he has become our education ambassador for the Program and attends outreach events.

In 2015 we wanted to try something new... Would an inexperienced Spotted Owl pair be able to successfully raise a chick in a captive environment? We fostered a Barred owl chick to a newly formed pair and they immediately took care of the chick, no problem. But what about a single female? A Barred Owl chick was given to a female Spotted Owl that was not pair bonded, and she also cared for the chick admirably. This knowledge gives us more opportunities for returning Spotted Owl chicks in the future. We no longer have to rely on a select few pairs when we are returning chicks to a nest after the handraising process is over. Both sets of foster parents did a great job and proved their readiness for the real thing.

The 2016 breeding season saw the same two pairs of Barred Owls produce four fertile eggs each in a single clutch, 6 out of 8 of which were viable. The eggs were artificially incubated and the chicks raised by our biologists for 10 days. We added a supplement and probiotic to the chick diet of rat meat for the first time. The result - healthy, strong and hungry babies! Again two young Barred chicks were given to foster Spotted owl parents to raise from day 10 right through the fledging stage. And the remaining four chicks produced were given back to their biological parents after ten days. All families did a great job!

While practice with Barred Owl eggs and chicks is important, another reason that we breed them is for release - to learn how successful (or unsuccessful) young owls bred and raised in captivity are when released into the wild. Since releasing Spotted Owls is such a huge component of the species survival plan, and with each and every individual Spotted Owl being so important to the future success of the species, it is imperative that we develop a well-thought out and tested release strategy.



We need to know that when these Spotted Owls, that we have all worked so hard to raise, are released into protected old-growth forest they will have the best opportunity for survival. The young Barred Owls will be raised in captivity with as little human influence as we can manage, then will be tagged with radio transmitters and released into carefully selected habitat, just as we plan to do with the Spotted Owl juveniles in the future. Our field biologists will follow the newly released birds for 4-6 months to see how they cope with finding food, dispersing and establishing their own territories, finding a mate and, ultimately, if they survive. The data that we gather from this study will provide essential information that our team needs to give the young Spotted Owls the best possible chance for success when we begin releasing them the following year.



Forrest with a group of Naturalists who came to visit the Breeding Centre.

Public Outreach

So far in 2016 we have attended six nature festivals across the Lower Mainland, hosted one fundraising event, and will be conducting a select number of tours later this fall. In March we were invited to attend the Trinity Western University Earth Week Student Fair and later that month attended an event at the Great Blue Heron Nature Reserve in Chilliwack. To celebrate the Easter season, we were at the Surrey Museum Easter Fair and OWL's Spring Open House where our nest stump trivia game for children was very popular. These events also saw the launch of our brand new Adopt an Egg fundraising campaign that peaked a lot of interest in the program as well as generating funds to allow us to purchase some new equipment. In May we brought our educational display all the way to Port Moody for the Fingerling Festival, and then all the way to downtown Vancouver for the first annual Species at Risk Day hosted by the South Coast Conservation Program.

In June we organized our first ever Pub Night fundraiser at the Townhall Public House in Langley where 85 of our supporters and friends joined us for dinner, drinks, owl trivia and a silent auction. This was a great way for all members of the Northern Spotted Owl Breeding Team to celebrate the health of the young chick we'd spent endless hours caring for and share this excitement with our local supporters. The event was successful in raising almost \$2000 all of which will go towards the creation of a new program website this summer. We would like to especially thank the Townhall Pub for hosting, as well as the businesses and individuals that donated items to our silent auction: Grouse Mountain Resort, Starbucks, Township 7 Winery, Greater Vancouver Zoo, Safeway Canada, Anthony Bucci, Zoe Keller, Valerie Raynard, and the Belich Family.

The private tours which we conduct during the non-breeding season portion of the year act as "test-runs" to see how public tours of the site can be run in the future and also serve to reward some select people who have donated either time, services or monetary donations to the program. The tours have thus far been much enjoyed by all guests and provided us with excellent feedback for moving forward. We are in the process of developing a tour program for the

general public so that anyone who is interested in seeing a Northern Spotted Owl for themselves and learning about the program can come to our breeding centre. We are also in the process of creating an outreach program so that we can visit schools and groups to reach more people with our message of conservation. If you are interested in coming to our breeding centre for a tour or in having us come to you with our outreach presentation, please send us an email at nsobreedingprogram@gmail.com. We hope to have both programs operational this fall.

As the Program continues to grow, we saw a need for a bit of extra help around the property and thought it would be a great opportunity to give members of our community the chance to experience what it's like running a Program such as ours. We have had such a positive response to our internship each year, but we also recognized that there were so many students, adults with full time jobs, and retirees that wanted to be more involved in the Program but the internship wasn't quite the right fit. So this past year we started advertising for volunteers; looking for folks both young and old with a passion for conservation that had a few hours free each week to come out to the breeding centre to give us a hand. We were very lucky to find 9 fantastic volunteers from around the Lower Mainland who were happy to come help out. Our volunteers typically come to the Breeding Centre once a week for 4-5 hours and help with all kinds of jobs that we need to get done! Every day is different for the volunteers, depending on which task needs done. Some days may be spent helping care for the rodent prey populations, watering trees, weeding, and cutting grass. While other days might be more focused on creating educational materials, managing our social media accounts, or fundraising. We have also had volunteers represent us at outreach events to talk to the public about our Program. This was especially helpful in the springtime when all the staff and interns were busy with chicks. A favourite volunteer job is taking Forrest the Barred Owl for an afternoon walk, which helps him get used to having other people handle him and allows the volunteers to interact with our ambassador on a personal level. There is always so much to do that our volunteers are never bored. Every day is different and we really appreciate everyone's enthusiasm and dedication! We try to show our appreciation by bringing in cookies, muffins, etc. but the

volunteers always seem to bring in treats for us too! We also hosted a volunteer dinner this summer to show our thanks and hope that it will become an annual event!

If you have a few hours a week and an interest in birds, owls or conservation, please email us and tell us all about it! We'd love to hear from you!



Nature Festivals

Our travelling display and Nest Hunt trivia game were enjoyed by hundreds of people this year as we made our way to 6 different nature festivals across the lower Mainland and Fraser Valley.



Wonderful Volunteers

Volunteers Bristol and Wes took it upon themselves to create this beautiful rock garden in front of our site office. We love our volunteers!

Looking Forward

As the next breeding season quickly approaches, we are hopeful that 2017 will be our most successful year yet with the potential for three brand new pairs, in addition to the three pairs that have already proven themselves to be excellent parents. By double-clutching our egg laying females we hope to produce more baby Spotted Owls, some of which would be released in 2018.

We hope to continue our partnership with FWCP for the internship program with plans to hire up to four interns to help care for all of the chicks we expect. We want to ensure that we have enough trained members of our team since we plan on being very busy next spring.



The breeding centre currently has 24 aviaries built for the owls in the Program, but as we continue to grow and produce more owls, more aviaries are needed. Our construction crew will be erecting a new Owl Housing Complex this winter that can contain up to 12 owls. It's a big job, but we know that our fantastic crew will get it done despite the cold weather and famous Pacific Northwest rain!

We are currently developing a Banded Owl release plan which we will put in place during the summer of 2017. We will release the 9 juveniles we have produced in the last two years, in addition to whatever offspring are produced next breeding season. All of

the owls will be tagged with a transponder and followed by our field biologists to teach us about release success.



Our education efforts will continue as we attend many of the same festivals we participated in this year, plus a few more. By sending our interns along with volunteers to outreach events they are able to experience education of the public outside of our breeding facility. We will continue to develop our Tour Program and hope to be offering tours to schools and the general public soon!

Aside from the excitement of potentially producing more Spotted Owl chicks next year, we are most looking forward to developing our new website. The Pub Night Fundraiser we held this past June generated enough funds to allow us to begin working on the first ever website for the Program. We have begun to write content for the site and volunteers are brainstorming on how to produce short eye-catching videos of the owls to feature on the site. We will also hope to use the site to host a live feed of the owl nest cameras during the breeding season which can be viewed by the public 24 hours a day, 7 days a week! The TD Friends of the Environment partnership has allowed us to purchase state of the art cameras and the footage we've been able to view on site will be set up to be viewed remotely on any computer, Smartphone, or tablet! All of the support from our social media accounts has

shown us that it is time for a formal website so that we can connect more readily with people all around the world.

July 2017 will mark the 10th anniversary of The Northern Spotted Owl Breeding Program. We have learned a lot about this species having faced many challenges over the last 9 years that no one could have predicted. We know that we have a long road ahead of us, but we are always growing and learning. The California Condor Re-introduction and Recovery Program is a shining example that sometimes conservation programs take years and years before any tangible results are seen. The Condors were at the brink of extinction in 1982 with only 22 individuals remaining, and now the total population is up to over 400. The success of the Condor Program and the charisma of the Spotted Owl keeps all of us here excited for the future. The Northern Spotted Owl is an iconic West Coast species and we all hope that it will remain (and eventually flourish) in British Columbia for many years to come.

FOR MORE INFORMATION

If you would like to know more about our program, please visit our Facebook site at www.facebook.com/nsobreedingprogram or email us directly at nsobreedingprogram@gmail.com