SPRING 2013 NORTHERN HERP CHRONICLES THIRD EDITION

ALASKA HERPETOLOGICAL SOCIETY

Photos by Joshua Ream

Boreal Toad (*Anaxyrus boreas*) often referred to as the Western Toad but distinguished by it's northern range.

NEW AHS MEMBERSHIP OPTIONS

Now available on our website you have options on your membership! We are excited to be able to offer you three choices for AHS Membership:

Annual Membership: $10.00

3-Year Membership: $25.00

Lifetime Membership: $100.00

Family Membership: $20.00

Please visit our web store at (www.akherpsociety.org) and renew your membership today! If you have any questions regarding your membership, please feel free to contact any of our officers, we are more than happy to help you in any way that we can!

MISSION STATEMENT

The Alaska Herpetological Society is a nonprofit organization dedicated to advancing the field of Herpetology in the State of Alaska. Our mission is to promote sound research and management of amphibians and reptiles in the North, **to foster responsible pet ownership and*** to provide opportunities in outreach, education, and citizen science for individuals who are interested in these species.

** Addition to Mission Statement was approved at the First Annual Meeting.*

From the Desks of the AHS Staff:

President's Corner:

AHS has now been in existence for over a year and we have made great strides in advancing the field of herpetology in the state of Alaska. I never imagined that the first twelve months of our brand new organization would be so productive. The challenge now is to maintain the same level of productivity and growth.

All organizations undergo phases of success and decline over time. Often, these phases are directly related to the participation and enthusiasm of the organization's officers and membership. The key to sustained success is consistency of effort. Our officers and members have contributed immensely to AHS over the past year, and while I fully anticipate their support to continue, I also understand that life sometimes becomes chaotic and that some things, AHS included, may momentarily need to be set aside.

Our officers have done a tremendous job at getting this organization off the ground, laying the foundations for long-term organizational viability. As AHS continues to grow, I would like to see some of the officer responsibility delegated to active members. I challenge members to step into leadership roles by organizing events, chairing committees, and eventually running for office. For better or for worse, the current Executive Board will not always be in place and the "consistency of effort" will need to be maintained by new, motivated and exceptional leaders within our ranks. For now though, I am excited for the challenging and exciting year ahead!

The spring thaw will be quickly upon us and once again our beloved amphibians will be emerging from their winter hibernacula to grace our northern landscapes. Please pay extra attention this year to the timing of your first frog sighting, to when you hear the first frogs chorusing, and when you see the first egg mass laid. Utilize our citizen science programs, submit photographic vouchers, and organize group outings. Lets make 2013 even better than 2012.

I look forward to working with each of you this year.

Joshua Ream
President - AHS

Vice President's Corner:

Hi fellow herpers! 2012 was a great year as we accomplished so much in our first year as an official organization. At the annual meeting held in October, I really enjoyed hearing about the various studies by researchers and students across the state of Alaska. Keep up the good work everyone!

This year, I'm eager to watch AHS grow even bigger and I'm looking forward to meeting more people who share a similar interest in amphibians and reptiles. Even if you don't know much about herpetology, AHS is a great source to start and we welcome all to join. AHS membership's make great presents too, and we have several membership options to choose from. Check out our webpage for more information.

This upcoming year, I hope to see AHS represented at more events, including an upcoming event held in Fairbanks: Dragonfly Day on June 29. If you have any outreach events or ideas you would like to share, please send any of the officers a message and we will try our best to make it happen.

Lastly, a big thanks to all who support AHS and we are beyond grateful for our awesome members. Please continue to spread the word to your friends, family, and co-workers about AHS!

Allyssa Gabriel
Vice President - AHS

Secretary's Corner:

First off I want to take this opportunity to thank each and every one of you for your hard work and help in getting AHS off the ground and where we are today. Without each and every one of you we would not be here and would not be able to continue on. Please renew your membership if you haven't already and consider using one of our new options of 3-year, family and lifetime membership!

Please keep us updated on your many adventures and consider writing an article or submitting pictures for your next newsletter this fall! Have a great summer!

Greg Cazemier
Secretary - AHS

Treasurer's Corner:

These past couple months have been really great for myself and AHS. I have recently had the privilege to go to West Valley High School in Fairbanks and speak about Wood Frogs and do some plugging for AHS. It was great to be able to see young adults get excited about the sciences and speak to them about opportunities in herp research and careers. Over the next couple months I will also by speaking at Hutchisosn High School about Wood Frogs and the research I got to help with. I am hoping by speaking to these high school kids about the wood frog I can inspire them to hopefully pursue more information on herps in Alaska and get involved in AHS.

Joseph W. Morris
Treasurer - AHS

EVENTS AND VOLUNTEER CORNER

Spring Migration Celebration, May 4, 2013

This was a much anticipated annual celebration of spring migration at Creamer's Field Migratory Waterfowl Refuge. Coinciding with the peak of bird migration, the program consisted of bird and wildlife viewing, information booths of local conservation organizations, nature walks, and activities for the whole family such as puppet shows, crafts, and games. This free event was cooperatively presented by Friends of Creamer's Field, Alaska Department of Fish and Game, the Alaska Bird Observatory, the Arctic Audubon Society, the Alaska Public Lands Information Center, Ducks Unlimited, and the US Fish & Wildlife Service. A huge thank-you to Rachel Shively for organizing the AHS table! For more information visit: www.creamersfield.org

Dragonfly Day, June 29, 2013

U.S. Fish and Wildlife Service will be hosting Dragonfly Day in Fairbanks on June 29, 2013. The public is invited to attend and the event is free. We are looking for 1-2 volunteers to staff the booth and help with educational activities and AHS outreach. Please contact Allyssa if you are interested or have any questions: Allyssa_Gabriel@fws.gov PH: 907-456-0213

2013 AHS Annual Meeting, October 19, 2013

Please plan to attend the 2013 Annual meeting either in person or by phone (teleconferencing will be available). We will be voting on several important issues, bylaw changes, and officer elections! The Executive Board has decided that the meeting this year will not be combined with a conference - conferences will be held in even-numbered years only. The annual meeting though is very important for reflecting on the past year and planning for the next. If you're interested in getting involved in any way, please let us know!

Denali State Park Herping / Camping Trip, To Be Announced

Please contact Joshua Ream if you are interested or have any questions: jtream@alaska.edu

MANAGING HERPS

Falk Huettmann, PhD, Professor
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How to Manage Amphibians and Reptiles: Towards Massive Extinctions or Massive Improvements?

Wildlife management is a well-established discipline and a mandatory policy (Czech and Kraus 2001). In its 'modern' form it mostly goes back to Aldo Leopold and the 1930s (Braun 2005), and by now it ought to be all-inclusive, science-based, adaptive, eco-system-based and resilient, using computing-power and other modern tools like online databases, new generation biochemistry, landscape ecology and social sciences (Liu and Taylor 2002). Wildlife management has a long institutional and administrative history, and it is well established at most good-reputation universities and science programs, and in a times with excellency in research. However, when it comes to amphibians and reptiles, we life in a global environmental crisis (Wake and Vredenburg 2008). Apparently, something is not adding up when it comes to the science-based non-game management concept of amphibians and reptiles and with most mandated institutions, yet. The literature shows that this is true for the tropics, as much as for the temperate and the subarctic regions, e.g. Hero and Morrison (2004).

In the following, I will review this situation for the general trend, provide examples and a constructive critique, and for some first suggestions to improve on. Clearly, the state of reptiles and amphibians is big business.

But in the arena of wildlife management, amphibians and reptiles are usually just classified as non-game (Anderson 2002), and with that, they share attention (as well as all available efforts and budgets) with over 1000 other species. It is clear from the start that such an approach puts amphibians and reptiles in the back-seat, whereas, they should instead receive a major emphasise, one way or another, e.g. as indicators of ecological processes (Primack 1998). So far, we still lack an efficient way to set priorities for conservation action and when budgets and man-power are limited.

Arguably, the management of reptiles and amphibians is a different beast than the traditional game management. Considering the global crisis, why not devoting an entire agency dealing with this serious subject that got so out of hand ? Reptiles and amphibians are facing different threats, and usually beyond what is known and for what is comprehendible even. Just think of water rights and 'peak water'! Already the occurrence of a single (but devastating) disease like the chytrid fungus has been virtually not managed (Cheng et al. 2011; but this is similar to most other invasive species and disease outbreaks that we have experienced; see Packard 2011 for Malaria and its animal hosts). Ultimately, the suggested 'toxic tort' is stressing animals (Ott 2005), such as discussed for instance with amphibians and reptiles, and it creates in the current framework other unfathomable problems to the classic wildlife management paradigms in regards to burden of proof, ecological complexities, dealing with a wide lack of science to act upon, and for a new legal paradigm when remotely located polluters create local problems. If a good population maintenance is the goal, then the federated governance system and with its states and provinces have widely ignored amphibians and reptiles, so far, and for a meaningful progress. Red Lists speak here for themselves (Czech and Krausman 2001). And on a global level, IUCN has not provided for a relevant guidance on how to implement the pre-cautionary principle they mandate, or developed a good policy set-up to achieve locally. As a matter of fact, in nations with the highest diversity of amphibians and reptiles one can often find 'chaos' when it comes to structured governance, management and enforcement (Young 2002 for background and with a climate change application). It is in that global governance situation where major challenges are to be resolved still, and with scientists still having to focus their attention to multivariate and policy problem-solving, carrying out such type of a study and analysis, and for a subsequent efficient resolution. Conservation management is to be time-sensitive (Primack 1998).

Judged by the pity state of most wildlife populations in wilderness and urban areas, and the wide mis-management of habitats and the atmosphere, it is clear that the classic wildlife management paradigm failed us already on most biodiversity subjects (e.g. predator-prey control, pollination, fisheries and many game species even). It is not even realistic to

(continued on page 5)

How to Manage Amphibians and Reptiles: Towards Massive Extinctions or Massive Improvements?

(continued from page 4)

be implemented when just looking at costs and required expertise and existing policy framework, and when seeing available budgets and time left to act upon (Czech and Krausmann 2001 for an assessment). While we have much environmental legislation and which is increasing since the 1970s, in parallel, the actual state of the man-made climate, human footprint and sustainability truly declined (Mace et al. 2010 for missed biodiversity targets world-wide). Even worse, many classic textbooks even disagree on presumed core wildlife management techniques such as maximum sustainable yield (msy), carrying capacity and marginalization of environmental impacts, e.g. Anderson 2002, Bolen and Robin 2003, Braun 2005). And almost none of these textbooks make a reference to amphibians and reptiles (or to any success stories for that species; see also Primack 1998). Keep in mind, most amphibians and reptile are harvested and can be seen as a sustainable resource. Realistically, wildlife management is still the only option we probably have to achieve sustainability. Modern wildlife management is a brainchild of the western society (Tabern and Payne 2004), and by now, it is rive for a serious revision: we are at the end of an era. This type of 'civilization' and its wildlife management certainly failed greatly for the gastric brooding frog, for the golden toad, and for over 400 species that just got proposed for listing with the Endangered Species Act (ESA) in the U.S. under the 'mega petition'. Alone the future IUCN red listings that will be coming with man-made climate change will make for an incredible administrative task when having to assess and to list all amphibians and reptiles that will become endangered any time soon (consider that there is already an old and long backlog of over 1,000 endangered species; Czech and Krausman 2001). While the classic single-species and non-game wildlife management failed us so dramatically (Taber and Payne 2004), so did the notion of Sustainable Development, and even more so. Judged by the global conservation debacle in recent history (Mace et al. 2010), a benign 'sustainable' development does not exist under the current framework. Such concepts basically mean development at all costs, but wildlife always get put behind (Taber and Payne 2004 and Huettmann 2011 for a review). Other concepts like eco-system management are still new, and hardly applied or proven yet (Belgrano and Fowler 2011 for a review). While one of the better updates, adaptive management is already around since the 1980s (Walters 1986). However, it still remains widely unused, nor is there a legal and online expertise and framework to achieve it (in adaptive management, a flexible legal system is needed as well as a well-trained institutionalized science-interface that allow for updating the actual laws based on science-findings). Latest approaches like resilience theory-based management are either not widely known in the reptile and amphibian community yet, or have never been implemented nor did they stop any natural resource degradation yet anywhere. Already their textbooks hardly make a relevant reference to amphibians and reptiles (Chapin et al. 2009), Instead of resilience, we just see the wholesale extinctions of amphibian and reptile populations worldwide, habitats included. In reality, the general management model for amphibians and reptiles looks more like 'management by ignorance', 'management by lack of funds', 'management against administrative deadlines', 'management by political obedience', and 'management by court decisions'; but none of these schemes work, and even worse: nothing better is known or on the horizon even.

By now, the reader might ask: but what at least about sea turtles, and the gains reported by the media for bycatch mitigations ? While narrow improvements might be true locally, there are still 100s of thousands of sea turtles by-caught, and most nesting beaches are in direct conflict with coastal real estate and other developments, apart from serious ongoing problems with ghost nets, ocean acidification, sea level rise, and climate change. And so, while some marine turtles might get spared now by some careful shrimp fisheries, perhaps, many other species get by-caught and overharvested, and despite huge NGO fund-raising campaigns.

Regardless of narrow high-tech management concepts promoted on a finite earth, the global decay, and with amphibians and reptiles in the lead, simply cannot halt and reverse if we keep producing, consuming and polluting in full steam, and when we keep promoting such economic growth policies in conflict with nature (Daly and Farley 2003, Rosales 2008). Arguably, without addressing any time soon our ecosystem limits, atmospheric and watershed decay, pollution, contamination, human population growth and multivariate impacts with an appropriate underlying wildlife management model, the dramatic amphibian and reptile situation cannot get better at all, and consequently the human population has to pay the prize for generations to come, globally (Diaz et al. 2006).

TOXIC NEWTS

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Studies on Toxic Newts: The Rough-skinned Newt *(Taricha granulosa)* in Southeast Alaska

Tetrodotoxin (abbreviated TTX) is the characteristic toxin in marine pufferfish considered to be a delicacy (fugu) in Japan. It specifically blocks nerve transduction and causes paralysis, but does not enter the brain. It is a strange phenomenon that TTX occurs in a wide range of unrelated marine organisms such as fish, clams, worms and an octopus, but also in terrestrial animals, particularly in some species of newts and salamanders, Taricha, Notophthalmus, Cynops, Triturus spp., frogs and toads, Atelopus, Brachycephalus, Colostethus, Polypedates spp. Its role in defence of newts (Taricha spp.) against its major predator, garter snakes (Thamnophis spp.), has been studied by the group of Brodie (cf. Hanifin, C.T., 2010. The chemical and evolutionary ecology of tetrodotoxin (TTX) toxicity in terrestrial vertebrates. Mar. Drugs 8, 577-593). Although symbiotic bacteria have been shown to be involved in the biosynthesis of TTX in marine organisms, the question, whether it is of exogenous origin or synthesized by the amphibians, particularly the newts, is still a matter of discussion.

In the red-spotted newt Notopthalmus viridescens from the east coast of North-America the toxin concentrations is highly variable ranging from zero to high levels of TTX in populations from the eastern states of the USA, but newts from the northern (Nova Scotia, Canada) and southernmost part (Florida) of their distribution range were toxin-free. Newts kept in captivity lose their toxicity over the years, their first generation offsprings are entirely toxin-free suggesting that this species is not able to produce TTX or inherit the ability to synthesize the toxin.

A similar situation exists with Taricha spp. Whereas T. torosa from California and T. granulosa from Oregon contain high toxin concentrations in their skin, specimens from British Columbia, Canada, exhibit very low or zero toxin levels. Since the distribution range of T. granulosa extends to southern Alaska, it will be very interesting to study, whether these newts are toxic or not.

In our attempts to map the toxin distribution in newts, we plan to collect rough-skinned newts from various locations in southern Alaska. It seems that this species is not rare and appears to be abundant in certain areas. The newt samples will be preserved in 70% alcohol for (a) toxin extraction and assays, (b) for studies on the toxin distribution in the body and organs using immunohistological methods. Some specimens will be kept alive and transported to our laboratory in Germany for breeding studies which will show whether the newts are able to produce the toxin or not, as it will be indicated by the toxin content (or absence) in the tadpoles and juveniles. The animals are kept under optimum lab conditions. Experience from previous studies confirmed that the methodology used is biologically adequate, no mortality occurred during transport and long-term captivity. We expect entirely new results on the toxin levels in the newts from Alaska when compared to those from southern origin. Whether a gradient in toxin concentrations from south to north is present and which metabolites of the toxin occur in the newt populations, are major questions we hope to solve.

Notes and suggestions about the distribution of T. granulosa are highly welcome. I plan to visit Alaska in May/ June 2013.

Photos by Joshua Ream

STIKINE UPDATE

Preliminary Results of a Mailed Survey

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In February of 2012, a total of 1,296 amphibian surveys were sent to each registered postal box in the community of Wrangell, Alaska to gauge Local Hereptological Knowledge (LHK) of these species on local landscapes. As anticipated, the returned surveys contained a wealth of important observational data concerning nearby amphibian populations as well as the nature and frequency of human interactions with these species. This data is slowly being compiled and analysed for publication, but a sample of the results are included here.

The respondents' perception of their own familiarity with local amphibians (Fig. 1) may lend insight on their ability to accurately identify amphibian species and their likelihood to notice amphibians on the landscape. According to the survey data, 85% of respondents perceive amphibians as important components of the local ecological community. The respondents' perceptions of amphibian importance to local human groups (Fig. 2) is particularly interesting in that 81% indicated that amphibians are important to all human groups. Among the 4.3% of respondents suggesting that amphibians are important to no human groups, none identified as Alaska Native. These results suggest that most citizens of Wrangell see amphibians as important to both people and ecosystems!

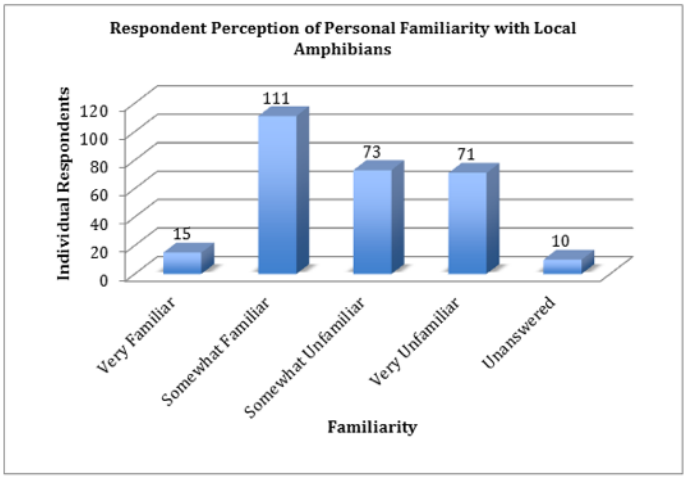

Figure 1. Respondent perception of personal familiarity with local amphibians where n=280.

Most respondents reported seeing amphibians locally only occasionally or rarely during their lifetimes and most reported that the frequency with which they encounter amphibians is less or the same now as it was in the past. Respondent observations of individual species (Fig. 3) shows that Boreal Toads and Rough-skinned Newts are seen most often while Wood Frogs and Northwestern Salamanders are seen least often. In addition, 150 respondents (53.6%) marked survey maps with specific amphibian observation point localities which will eventually by plotted using Geographic Information Systems (GIS) and compared to active sampling efforts.

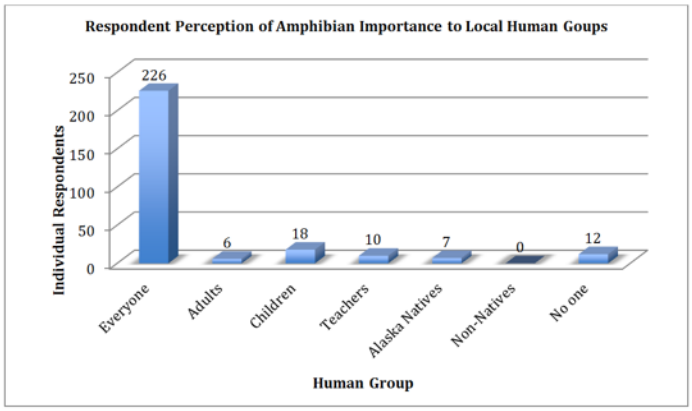

Figure 2. Respondent perception of amphibian importance to local human groups where n=280.

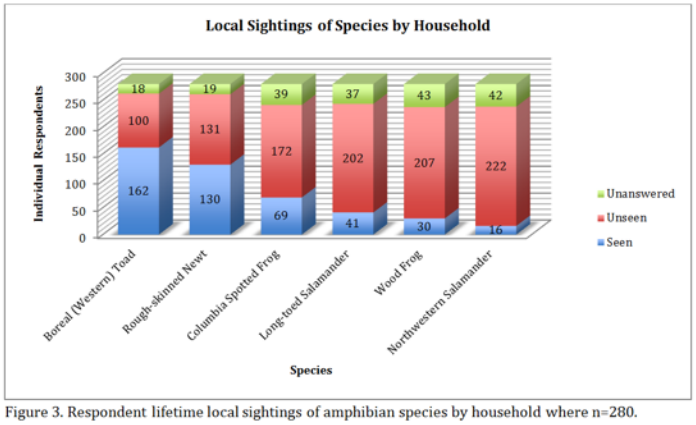

Figure 3. Respondent lifetime local sightings of amphibian species by household where n=280.

This is merely a sample of the wealth of data obtained from the mailed survey. The data provides a clear picture of human perceptions of amphibians on local landscapes and their relationship to these species. It also suggests that valuable observational data on amphibians, their habitats and changes over time are available as part of the LHK repertoire of local stakeholders. A follow-up survey mailed in January of 2013 is expected to elucidate additional information on respondent local knowledge of amphibian populations near Wrangell.

Wood Frog vs. Human: Life Around the Yentna River

Sara King
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In the Lake Creek/Fish Lakes area on the Yentna River, my observations on the wood frog have been made over the course of about 26 summers. The frogs themselves are showing no adverse effects that I can see—no missing limbs or eyes, no deformations that I've noticed. The numbers of frogs have definitely fluctuated year in and year out, though I think it's more a function of dry years and hard winters than anything human-related. My guess is that the frogs, by the nature of their less-than-desirable wetland habitat, are secluded enough from human activity that they aren't getting hit with any (many?) human chemicals. The only local-borne pollutants that would be reaching the swamps that I can think of would be snowmachine exhaust and possibly plane exhaust (when the swamps are used as runways in winter). Otherwise, humans keep to the rivers and lakes and pockets of developed land around here.

The wood frog can be most readily found in the swamps themselves, along muskeg-type lake edges, and in thick stands of horsetails that have grown up in areas of disturbed soil, like gardens and runways. If anything, I think the frogs hiding out in the cool shade of the horsetails are going to be the most likely to be exposed to human chemicals and interference, simply because horsetails do not congregate in those kind of numbers unless humans have left some sort of mark behind. Frogs can also be found along foot and 4-wheeler paths through the woods, though with much less regularity.

Though it's been suggested that pike, an invasive species in our area of Alaska, have been using frogs as an important food source, I have seen little evidence of it. I've caught thousands of pike in my life, and I've seen maybe two frogs in their stomachs. (I say 'maybe' because I'm not sure if the second one was something I actually found, or an old memory of someone telling me that they caught a pike that had eaten a frog.) I have found more baby ducks and mice in pike stomachs than frogs. Further, at least in the Fish Lakes area, fishing with frogs has—in my limited experience of being on the shore when two people from the Lower 48 tried it—very little effect in comparison to other bait methods. I've stood on the shore and watched bass fishermen from the Lower 48 fish with live frogs for hours, then simply cast in my standard bait and immediately gotten a hit. I'm honestly not sure why that would be, as pike are notoriously voracious, even going so far as to tear the rubber glove off a lady who was washing her hands in one of the lakes, slicing up her hand in the process. My guess is that frogs are somehow less palatable or don't carry the bright coloration that drives pike wild. Though, to be honest, despite seeing multitudes of frogs in woodlands and swamps, I've never seen a frog in a lake up here and I've spent a lot of time wading through the local river system, so I actually wonder how many wood frogs actually go swimming in the lakes. They're readily abundant along the sides of the lakes, but there almost seems to be a frog-free zone of like 4-8 feet around the edges of fresh or flowing water. They seem to much prefer the stagnant puddles and swampy areas a few more feet away from the lake edges, usually created by winter snow machine tracks that have carved their way through the delicate lakeside brush.

During the rainy parts of the summer, frogs also like to hang out in the lawns of the lodges out here. You can literally go around with a 5-gallon bucket and fill the bottom in 20 minutes. (I know this because it was one of my jobs as a kid to save frogs from the lawn-mower.) During the drier parts of the year, I think they spend more time in the woods or in areas of more shade, but during the flood seasons, when there's lots of rain and general cloudy weather, they venture out of the woods and into areas of (I'm guessing) better hunting. Another place where frogs around here have inevitable contact with humans is in the local gardens. It seems like the same things that frogs seek out to survive–shade, moisture, bugs—are found in plentiful supply in gardens. I've noticed that they like potato and other thick-foliaged plants the best. Anything that creates an overhead mat of protection from the sun is going to collect frogs.

In the spring in our area, the frogs come out en masse in the swamps, and you can hear their vocalizations from as far away as the bluffs overlooking the marshy areas. I've never heard their calls in the woods, but they are so loud along the swamps during the thaw that it kind of sounds like a roar. I've heard them make similar vocalizations along the edges of lakes, but again, it seemed they were coming from the stagnant puddles made by winter snow machine tracks (unused in summer) or puddles of stagnant water in the marshes beside the lakes, not near the lakes themselves. The timing seems to coincide with the last of the winter ice melting off the marshes and the arrival of the ducks and geese in their annual migration. Both multitudes of frogs and enormous flocks of ducks are on the marshes (which are always flooded with spring melt) at the same time, and often it's hard to distinguish between their calls in the buzzing roar of sound that follows. My guess, looking at the timing of it, is that the birds are probably using the swamps as a pit-stop to eat frogs before moving on north. Bugs certainly aren't prevalent at that time, and the waterfowl do appear to be eating something. It's also pretty clear to me that they prefer the melt-flooded swamps to the lakes in their migration through here—at least in our area. We can see hundreds, if not thousands, of ducks and geese on the swamp, then go and count maybe twenty on the lake, if that. In this case, swamp and lake are only about half a mile apart.

ENVIRONMENTAL FACTORS

Michael Porzio, Zoology Master's Student
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Environmental Effects Now and In Your Future

My name is Mike Porzio and I'm a zoology master's student at Washington State University in Pullman, WA. I'm originally from a small town in central Pennsylvania and got my Bachelor's degree in Micobiology and Biochemistry from Penn State. After a few years of post-graduate research experience studying protein and DNA interactions, I quickly realized I didn't want to be stuck in a lab every day. I decided to switch to biology for graduate school since it allows you to conduct cutting edge research in the laboratory while also getting a chance to go out in the field and study animals in their natural habitat. By studying organisms instead of molecules, your work is tangible instead of viewed through a microscope. As an avid outdoorsman, being outside, immersed in the science I'm conducting, and observing the interaction of living things with their environment is crucial to me. My enthusiasm for nature and adventurous spirit led me to Alaska as a great place to visit and design my research project on amphibians.

I am broadly interested in how environmental factors shape amphibian development and how these effects carry over into adulthood. In particular, I'm interested in how stressful factors like chemical contamination and habitat destruction experienced as tadpoles can alter their immune systems as adults. I would like to compare how animals that are raised in optimal conditions differ from those raised in the face of environmental challenges. The question I'd like to address is how does the environment you're raised in affect disease susceptibility later in life? If you have a harsh, stressful upbringing, is that going to affect your immune system function as an adult?

The amphibian I'm using to investigate these questions is the wood frog, or Rana Sylvatica, which lives throughout the United States and Canada, including Alaska. Alaska hosts an abundance of wood frog habitat ideal for the nature of this study. Water quality and contamination varies greatly throughout the state, and I hope to collect wood frog tadpoles from 3 distinct geographical locations to compare immune system function of populations from different habitat quality. The collection sites of interest are the Kenai National Wildlife Refuge (KNWR), Anchorage, and Talkeetna. I will be transporting tadpoles back to Washington State University's amphibian research facility where they will finish their developmental period. Once they've metamorphosed into adult frogs, I'll take physical and immunological measurements such as the number and type of white blood cells in their blood and the amount of anti-microbial protein on their skin surface. These elements are some of the key components to amphibian immunity and are their first line of defense against infection and disease, and are indicators of their overall health and ability to combat illness. The motivation of this project is largely conservational, since disease is a major threat to all animals, especially amphibians. If we can better understand how the amphibian immune system develops and functions, then we can hopefully lessen the impacts of disease and better protect populations.

DID YOU KNOW?

In the 1960s there was a multiple year study that showed the average data of Wood Frog emergence there was between April 24th and May 4th.

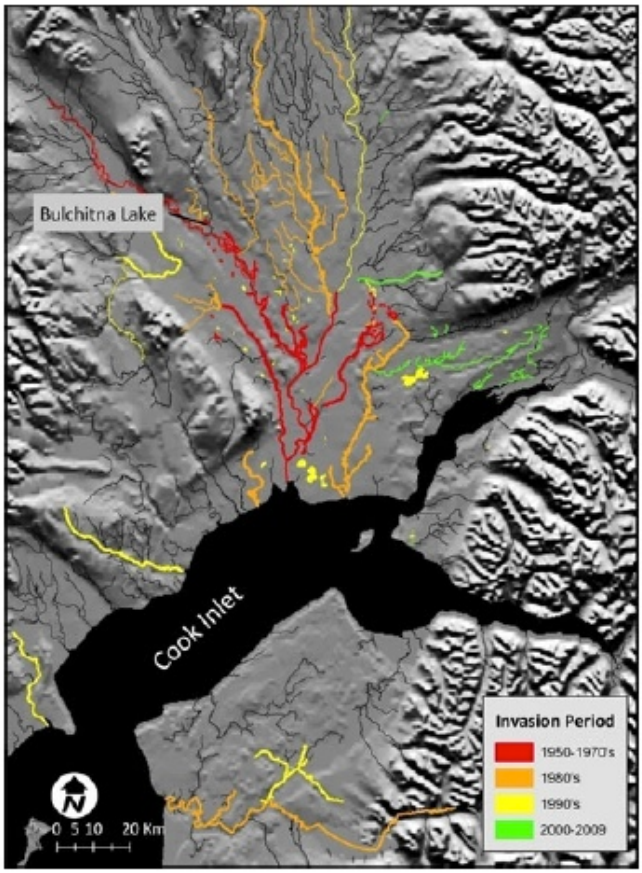
COLLECTING AMPHIBIANS IN AK IMPORTANT NOTE:

Anyone collecting wild amphibians for any purpose in the state of Alaska must have a scientific collection permit. For more information on obtaining one of these, please visit the Transport and Possession Permits section of the Alaska Department of Fish and Game's website: http://www.adfg.alaska.gov.

THE PIKE

"This northern pike was captured in a side channel slough along Alexander Creek which drains into the lower Susitna River. Although pike prefer soft rayed finfish above other prey, they are opportunistic feeders and it is not uncommon to dissect a pike and find that they have targeted specific prey, as with this pike eating wood frogs. More often it's a mixed bag, but often we'll find exclusively leeches, or pacific lampreys, or all frogs. Note also the 6 frogs in progressive states of digestion."

-Sam Ivey, ADF&G Area Management Biologist
Northern and West Cook Inlet



The figure on the right was borrowed from Haught and Hippel (2011) and shows the spread of northern pike in Southcentral Alaska since the time of its illegal introduction into Bulchitna Lake in the 1950s.

See the articles below for actual studies involving pike predation in Alaska. The first recognizes that amphibian distribution is highly affected by fish predators and that " the scarcity of frogs in pike stomachs may result from frog populations being quickly reduced or eliminated upon pike invasion,"a possible reason that Sara King does not encounter this often in Skwentna today.

Haught, Stormy, and Frank A. von Hippel. "Invasive pike establishment in Cook Inlet Basin lakes, Alaska: diet, native fish abundance and lake environment." *Biological Invasions* 13.9 (2011): 2103-2114.

Sepulveda, Adam J., et al. "Introduced northern pike predation on salmonids in southcentral alaska." *Ecology of Freshwater Fish* (2013).

NATIVE PERSPECTIVES

"Frog Crest of the L'uknax̲.ádi, Sitka, 1902. This is the frog carving which the Kiks.adi destroyed when the L'uknax̲.ádi attempted to dedicate a Frog House at Sitka in 1902. The frog was carved by Daniel Bensen (Daqusetc), Teqwedi of Yakutat, and Tel nawu, 'Dead Raven,' L'uknax̲.ádi artist of Sitka, chief of the Koskedi Cow House, and painter of the Golden Eagle Screen for the Drum House of the Teqwedi. The frog was chopped up by the Xuxwatc, "Tanned Skin Blanket," a Kiks.adi man. The L'uknax̲.ádi men posing with the Frog are, from left to right, Ned James or Stagwan; Duksa at, husband of Jim Kardeetoo's sister; Dexudu'u, "Buys Two at a Time," brother of T. Max italio; Quxtsina, another brother; and Lkettitc. (Photograph courtesy of Mrs. Harry K. Brember.)"

Frog Wars Among The Tlingit

Several Tlingit clans have acquired the frog as their crest, an important social and spiritual relationship based on ancient dealings with these species. In traditional Tlingit society, crests were owned by the clan, and any attempt by another clan to usurp this relationship was seen as causing great dishonor and displaying extreme disrespect. These sometimes lead to violent disputes such as the one described below. Please remember that, as with any conflict, there are always two sides of the story.

The K̲aach.ádi and the L'uknax̲.ádi are said to have acquired the frog crest relatively recently, and this precipitated a riot when the latter group attempted to erect a frog carving at Sitka in the late 19th century (United States 1908). Clans are prohibited from using the crests of another, but migrations have led to their use on the houses of the same clans and descendent clans in other areas (Post 2010). This situation has caused conflicts in the past and almost led to war in the late 1800s when the L'uknax̲.ádi erected a totem containing the frog. Swanton (1908) explained:

"The frog was a special possession of the Kiks.adi who claimed it from the fact that persons of their clan had held special dealings with frogs, although the stories told about them at Sitka and Wrangell differ. The G̲aanax̲teidí of Tongass tell the same story as the Wrangell Kiks.adi about the marriage of a woman of their clan to a frog, and probably claim the frog also. In recent years the K̲aach.ádi of Wrangell and the L'uknax̲.ádi at Sitka have tried to adopt the frog, but in the latter case their attempt to put up the frog carving precipitated a riot."

The L'uknax̲.ádi originated in Yakutat but some eventually migrated to Sitka. While still in Yakutat, this clan acquired the frog as a crest when they found a giant frozen white frog while digging the foundations of a house at Gusex (de Laguna 1972). They named the building Frog House and decorated it with frog house posts and a frog screen (de Laguna, 1972). This clan began to give frog personal names such as Old Frog, Cold Skin, and Drowning or Sinking (de Laguna 1972). Houses were later built at Dry Bay near Sitka in 1909 and 1915 which were named "Frog House" and subsequently decorated with figures and screens (de Laguna 1972). In Yakutat no one disputed the L'uknax̲.ádi claim to the frog, but at Sitka they were quickly opposed by the Kiks.adi (also of the Raven moiety) who were more powerful and claimed the frog as theirs alone (de Laguna 1972). When the L'uknax̲.ádi attempted to dedicate a frog house in Sitka in 1902-1903, the Kiks.adi, particularly those from Wrangell, were enraged (de Laguna 1972).

The Frog house decorations (carving and screen) involved in the event were carved by skilled Tlingit artists, Daniel Benson and Yel nawu, and were said to cost the clan a lot of money (de Laguna 1972). Benson was a Teqwedi artist from Yakutat and born around 1868 and Yel nawu (Dead Raven) was from Sitka. The carving was eventually secured to an inner wall in the middle of the house and appeared as though it stuck halfway out both sides (de Laguna 1972). The picture shows the carved frog that lead to the dispute as well as some of the men involved.

According to de Laguna's Yakutat informant, the Chief of the Frog House in Gusex named Stagwan, uncle of Jack Ellis - a L'uknax̲.ádi sponsor of the event, was present in Sitka for the dedication ceremonies (de Laguna 1972). At one point, Jack Ellis, his mother (Elizabeth or Duqwetc), and Stagwan were the only ones in the house. This is when the Kiks.adi Chief named Xuxwatc (Blanket of Tanned Skin) broke in and began chopping the frog off of the wall (de Laguna 1972). De Laguna's informant describes what happened and the sentiment afterward:
"And everybody get down on Stagwan. 'Why didn't he kill that man?' And Elizabeth grabs the gun; she was going to shoot it. But he grabs that gun away from her and throw it down. She was going to shoot the people cutting up the Frog…

(continued on page 12)

Frog Wars Among The Tlingit

(continued from page 11)

Her name would have been high amongst our people if she had killed that [Kiks.adi] man. But that Stagwan grab the gun away. 'You go to jail if you kill anybody.' She just bite her nails. But what can a woman do? Her name would have been printed in a book. Get her name high… She would have died in prison, just the same, but her name would have been up amongst us. Oh, it's a big trouble."

He added: "Oh, that was a upset! Everybody was nervous – even up here. They just shove that man around here when he come back. 'You coward! Why didn't you get a gun?' He is 'uncle' to Jack Ellis. Oh his brothers got mad at him. His sisters, too. Who's going to die for you?"

In Stagwan's defense, de Laguna suggests that he was doing his best to prevent bloodshed and succeeded.

Before war broke out this situation was brought to federal court under Judge Johnson who was on the case for two years before announcing that the court had no legal right to intervene in the dispute (Harring 1994). This effectively denied the protection of US law over this form of Tlingit property. Not long after nine Wrangell Kiks.adi cut down the totem at night using a special ladder. They were charged with "rioting" and held in jail on $1000 bond in order to dissuade future aggression (Harring 1994).

De Laguna suggests that the story and sentiments were biased depending on which moiety her informants were members of. Ravens in Yakutat were quite upset years after the event and defended the L'uknax̲.ádi claim to the frog, one indicating that:

"They [L'uknax̲.ádi] had that Frog for a totem pole [i.e. crest]. They had it for generations. That totem proves honestly that Frog our business. It's ours. It's not the Kiks.adi's."

Yet another informant defended the claim:

"That's ours from inside, from Gusex. They weren't going to call it Xixth hit, but when they dig up the frog, they call it that [i.e. Frog House]. That's a long time ago. It's before the Kiks.adi found that frog in the ocean that they claim.

The G̲aanax̲teidí also claim the Frog. They told me that in Juneau. But they don't fight with us. They just keep making it and keep quiet."

A neutral opinion was suggested by de Laguna's Yakutat informants of the Eagle moiety indicating that "The Kiks.adi frog was an old, old one, and they didn't like the L'uknax̲.ádi to get a new one" or the admission that "the Kiks.adi were probably right, because the Frog is more on their side." Given that the Kiks.adi claim is based in legend rather than an event of recent history, the claim is likely older since these crests are considered to be ancient (de Laguna 1972).

Xuxwatc had apparently warned that he would split up the frog if it was displayed (de Laguna 1972). After doing so, he went to Ketchikan where someone had made him a totem pole with L'uknax̲.ádi crests, which he called Ta gas (Sleep Pole) to get back at them (de Laguna 1972). His own paternal grandfather was L'uknax̲.ádi and before Xuxwatc died, he gave the pole back to that clan as a peace offering (de Laguna 1972.) It now resides at Charley Kitka's house in Sitka who paid $700 for it because he did not want to get it for free (de Laguna 1972).

The event did not seem to dissuade the L'uknax̲.ádi from representing the Frog crest at Sitka thereafter. Another Frog House was dedicated by Jack Ellis in 1950 and a carving of a frog was placed on his tombstone (de Laguna 1972). A L'uknax̲.ádi informant of de Laguna at Yakutat said that they contemplated saying the following to a Kiks.adi visitor in 1952: "You are our enemy. We don't forget the Frog House."

References: Please visit akherpsociety.org

Anchorage Wood Frog Emergence:

These Wood Frog pictures were taken by AHS President Joshua Ream on May 13th, 2013 in Anchorage, Alaska. The frogs emerged at this pond sometime between May 8th and May 13th. Frogs were chorusing but no egg masses were present as of yet! Bring on the Herps!

AHS ACCOMPLISHMENTS:

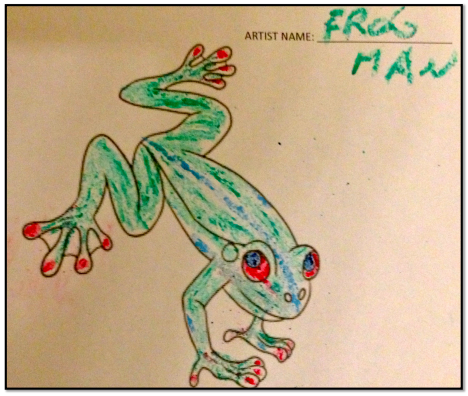
This has been an amazing year for AHS as a whole. We have accomplished so much, thanks to you, our members, here is a list of some of the things we have accomplished this year:

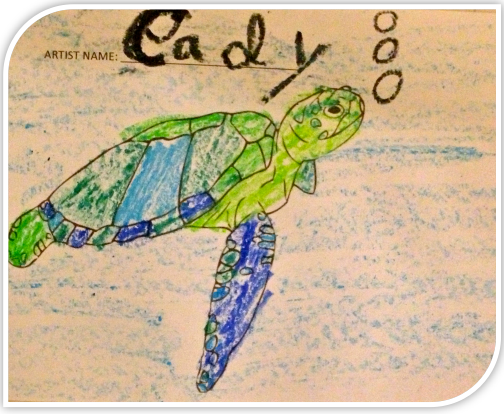
- Successful First AHS Conference
- Icky Squishy Gooey Halloween Event at the Museum of Natural History
- Launch of Pet Store / Classroom Education Campaign
- Successful Clothing Sale
- Completions of Introduced Species Pamphlets
- 501(c)3 application fee funding goal reached. Application submitted!

PHOTO COLLAGE

First Annual AHS Meeting, October 2012

Icky, Squishy, Gooey - Alaska Natural History Museum - October 2012





SPECIAL THANK YOU:

Special thank you to Cindy Bartosh and Sara King for your recent contributions! Thanks to your donations AHS has submitted our 501c3 application!

Submitting our 501c3 application was a major milestone for AHS! This wouldn't have been possible without the financial support of our members. Congratulations to AHS and everyone involved. Keep your fingers crossed for an expedient and positive decision from the IRS!

AHS Logo

The official logo of the Alaska Herpetological Society (AHS) was designed by Katie Bode and features the Rough-skinned Newt (*Taricha granulosa*), the Wood Frog (*Lithobates sylvaticus*) and the Garter Snake (*Thamnophis sirtalis*). The Wood Frog was chosen as this species occurs throughout most of Alaska, exhibits incredible freeze tolerance and is widely known to our citizens. The Rough-skinned Newt is our salamander representative on the logo and is found commonly in southern Southeast Alaska. This species exhibits a brilliant orange / red stomach that warns predators of their toxicity. The Garter Snake is our lone reptilian representative on the logo and is considered enigmatic in Alaska. While there are no vouchers of natural occurrence yet for this species, this snake also represents our commitment to the needs and concerns of those who enjoy herpetofauna as pets in their homes. The green background of the logo represents our commitment to responsible stewardship and conservation while the white AHS letters represent institutional research. The silhouette of Alaska represents our dedication to the state and its citizens as well as the promotion of citizen science and education. Lastly, the logo is set within a crest which signifies our sense of community and shared interests.

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