# An Opportunistic Amphibian Inventory in Alaska's National Parks 2001-2003

## Final Report

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240 W. 5th Ave
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**National Park Service**
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**Southeast Alaska Network (SEAN)**
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## *Abstract*

The National Park Service identified amphibians as a taxonomic group of concern for Southeast Alaska in April 2000. Because abundance, status, and habitat requirements of most amphibian species are poorly understood in Alaska , the Inventory & Monitoring Program developed an opportunistic amphibian inventory to gather baseline information. Between 2001 and 2003, 40 observers recorded 79 observations, and approximately 1600 individual amphibians were recorded at 65 distinct sites. Species found included the western toad *Bufo boreas* (40 observations), wood frog *Rana sylvatica* (24), Columbia spotted frog *Rana luteiventris* (2), rough-skinned newt *Taricha granulosa* (1), and northwestern salamander *Ambystoma gracile* (1).

The known scientific ranges of most species were extended by this project. This inventory also confirmed the presence of amphibians in ten of the sixteen parks in Alaska. Notable western toad breeding sites were documented in Glacier Bay National Park and Preserve, and Klondike Goldrush National Historic Park. Also of note, a single northwestern salamander was documented on the outer coast of Glacier Bay, and a rough-skinned newt was found near Sitka National Historic Park. Two records were submitted for Columbia spotted frogs on the Canadian side of Chilkoot Pass, and wood frogs were documented near the Canada-US border along the Tatshenshini River. A few recent reports that fell outside of the dates of this project were included that provided new species information, or were from previously undocumented locations.

Voucher specimens were not collected for this project. A search of the University of Alaska Museum located 58 amphibian specimens that have been previously collected in the National Parks. These collections represent a significant, though small, historic amphibian collection for additional research in the future.

Long-term residents of Gustavus, Alaska, near the mouth of Glacier Bay, had anecdotal reports of once abundant western toad populations in the area, and noted a significant decline in numbers from the 1970s to today. The cause of this decline remains unknown and warrants additional investigation, though researchers suspect that post-glacial uplift may be causing wetland drying, and thus affecting the aquatic habitat of the species.

This project was a valuable first step towards comprehension of the presence and spatial distribution of amphibian species in Alaska's National Parks. Far more monitoring is needed to establish abundance, geographic distribution, conservation status, and to estimate population trends of these enigmatic and important species.

## *Executive Summary*

The National Park Service identified amphibians as a taxonomic group of concern at the Biological Inventory Scoping Meeting in April 2000. Few species of amphibians have been confirmed for Alaska's National Parks and most are listed as "Probably Present" in the National Park species database NPSpecies. Because basic information on species presence/absence, distribution, status, and habitat requirements of amphibians is poorly understood in Alaska, the National Parks in Southeast Alaska chose to develop an opportunistic inventory of amphibians through the Inventory and Monitoring Program (I&M). This project utilized observations reported by field staff while involved in other projects, and was designed for use in all of the National Parks in Alaska for the years 2001-2003.

As a direct result of this inventory, five species of amphibians were documented in, or near, the National Parks. In total, 79 observations were recorded by 40 observers. The large majority came from Glacier Bay National Park and Preserve (n=40) and Klondike Goldrush National Historic Park (n=24). With this opportunistic approach, it is not possible to say if this is due to the number of observers, or of amphibians, though there was far more awareness of this volunteer inventory in these two park units, and presumably more observers looking out for amphibians.

Species encountered included western toads *Bufo boreas* (Baird and Girard 1852), wood frogs *Rana sylvatica* (LeConte 1825), Columbia spotted frogs *Rana luteiventris* (Thompson 1913), one rough-skinned newt *Taricha granulosa* (Skilton 1849), and a single northwestern salamander *Ambystoma gracile* (Baird 1859). A few sites had numerous individuals, and two ponds had hundreds of tadpoles. Observers encountered and documented approximately 1600 individual amphibians in three years at 65 different sites throughout ten of the sixteen parks in Alaska. Amphibians could have been encountered in the other parks and areas, but simply not reported to this project.

Observations included one to many individuals. During this three-year project, 15 wood frog observations were submitted, 60 western toad observations, two Columbia spotted frogs, one rough-skinned newt, and one northwestern salamander. Only the wood frog, northwestern salamander, and western toad were documented within the legal borders of the park units. The others were found close to the park borders, and were included for this reason.

The known geographic ranges of wood frogs, western toads, rough-skinned newts, and northwestern salamanders were extended by this project. This inventory also confirmed the presence of wood frogs in Katmai National Park & Preserve (KATM), Lake Clark National Park & Preserve (LACL), Kobuk Valley National Park (KOVA), Yukon-Charley Rivers National Preserve (YUCH), and Gates of the Arctic National Park & Preserve (GAAR).

Notably, a volunteer found a single rough-skinned newt on a small island not previously known to have this species, in Sitka Sound, 1km from Sitka National Historic Park (SITK). Columbia spotted frogs were identified on the Canadian side of the Chilkoot Trail, within 8 km of the borders of Klondike Goldrush National Historic Park (KLGO).

Several western toad breeding sites were discovered near the airport in Gustavus, Alaska and in the Dyea Flats area of Klondike Goldrush NHP. These breeding sites are interesting because they were the only large concentrations of individuals found during the course of this project, and are accessible locations for additional long-term monitoring. A number of the western toads were observed in the marine inter-tidal area of Glacier Bay National Park and Preserve (GLBA). A surprising abundance of western toads in Glacier Bay were found in recently de-glaciated areas that have been free of ice for 30-100 years. Characteristically, these areas offer little in the way of vegetative cover or other resources for survival, and habitat use by this species remains unidentified.

A few recent reports that fell outside of the dates of this project were included if they provided new species information, or were observed in previously undocumented locations. A single observation was submitted from 1994 for wood frogs along the Tatshenshini River 15-20km upstream of GLBA, and the park's first

observation of a northwestern salamander was reported from 2000 on the outer coast in Graves Harbor. There was also a combined record of wood frogs from the Kobuk River in the years 1994-98.

As a part of this inventory, the holdings of the University of Alaska Museum's (UAM) Arctos Database were searched and 58 specimens identified that had been collected in the National Parks. Most recently, specimens were collected incidentally during small mammal research in Denali National Park & Preserve (DENA), Wrangell-St. Elias National Park & Preserve (WRST), and YUCH. There are also several historic specimens in the UAM holdings from KOVA, GAAR, GLBA, WRST, and KLGO that could also be a resource for further research into genetics, phenology, biodiversity, and other studies.

Also incidental to this inventory, long-term residents reported historical anecdotes of once abundant western toad populations in the Gustavus, Alaska area, at the mouth of Glacier Bay. Residents have noted a significant decline in numbers from the 1970s to today. This may suggest that post-glacial rebound in the area is exacerbating wetland drying, reducing toad breeding habitat, and thus affecting toad numbers.

Basic inventories like this provide valuable baseline information for longer term ecological monitoring. This project was a useful first step towards understanding the poorly known distribution of amphibians in Alaska's National Parks. More research is needed and warranted on these species as indicators of ecological health. Only through additional monitoring, can we better understand their roles in the ecosystem, spatial distribution, habitat requirements, population trends, and the possible causes of these trends.

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# Tables and Figures

## *Introduction*

In 1989, participants of the first World Congress of Herpetology, noted that one pervasive theme was heard throughout the proceedings; frogs, toads, and other amphibians were in trouble from many parts of the world. Presentation after presentation showed declines and disappearances from across the globe in a wide variety of habitats, from protected areas, unprotected areas, rainforests to deserts. Scientists grew very concerned that a far-reaching cause, or causes were at work, and noted that the speedy declines, and sometimes rapid extinctions, demonstrated a great need to act quickly. Some causes have been discovered since that initial alarm, but in most cases, a single distinct cause is never found. Researchers believe, that typically numerous factors are to blame for these sudden and unexpected declines. (Stebbins & Cohen, 1995) (Heyer *et al.*, 1994)

Amphibians, because of their porous nature to liquids, and their aquatic life histories are seen as excellent indicators of ecosystem health, and may be the first taxonomic group to show environmental degradation to their habitat. Unfortunately, amphibians living in marginal habitats also normally tend towards a high degree of population fluctuation, and thus, long term monitoring is essential in order to bridge these local fluctuations and see the larger population trends. (Heyer,*et al.*, 1994)

Amphibians have not been studied intensively in Alaska by researchers. Little is known about their threats, predation, geographic distribution, population stability, habitat requirements, genetics, etc. (Hodge, 1976)(Stebbins & Cohen, 1995)

Alaska's known herpetofauna is limited to six confirmed native species and two introduced non-natives. A few enigmatic and un-verified species have been reported in the past, but have not been substantiated recently. (MacDonald, 2003) The following table (Table 1) outlines the conservation status for the native amphibian species in Alaska. Many of the species found in this state, are threatened and endangered, and some extinct, in large portions of their former range in the lower 48 states. According to the Alaska Natural Heritage Program (ANHP), most Alaskan species are rated as globally secure, but have an uncertain status in the state. (NatureServe, 2004)

*Table 1. Conservation Status of Alaskan Amphibian Species.*

| SPECIES | ANHP Status | IUCN Status | U.S. ESA |
|---|---|---|---|
| Northwestern Salamander, *Ambystoma gracile* | G5/S2? | | |
| Rough-skinned Newt, *Taricha granulosa* | G5/S2? | | |
| Western Toad, *Bufo boreas* | G4/S3? | endangered | (PS) |
| Columbia Spotted Frog, *Rana luteiventris* | G4/S2? | | (PS) |
| Wood Frog, *Rana sylvatica* | G5/S3S4 | | (PS) |
| Long-toed Salamander, *A. macrodactylum* | G5/S2? | | |

G = global (status throughout its range), S = subnational (status in Alaska)
1 = Critically Imperiled; 2 = Imperiled; 3 = Vulnerable; 4 = Apparently Secure, long-term concern;
5 = Secure, widespread, abundant; ? = Inexact Numeric Rank, insufficient information.
IUCN = International Union of Concerned Scientists
US ESA = Endangered Species Act - (PS) = Partial Status – a portion of the range is at risk. (Source: *NatureServe, 2004)*

Even less is known of amphibian distribution in Alaska's National Parks (Lenz *et al*., 2003). Because of this information gap, and due to concern over the documented decline of many of the species of amphibians that were expected in Alaska, the National Park Service (NPS) identified all amphibians as a taxonomic group of concern during the Biological Inventory Scoping Meeting in April 2000. The objectives of this meeting were to bring NPS biologists, university professionals, and taxonomic experts together with other agency personnel to:

1. Launch the network-based I&M program in Alaska, and
2. Identify and prioritize biological inventory needs for each network of parks. (Sharman & Furbish, 2000).

At this conference, the Alaska Natural Heritage Program (ANHP) delivered their assembled information on reptiles and amphibians for all of Alaska's National Parks and lists of species which were expected to occur in each park.

This meeting was sponsored by the Inventory and Monitoring Program (I&M), established in 1992 to provide consistent databases of information about the natural resources of the America's National Parks, including species diversity, distribution and abundance; and to determine the current condition of park resources and how they change over time.

In order to begin to understand amphibian distribution in Alaska, I&M and staff from the SE Alaska parks conceived an opportunistic amphibian survey for the years 2001-2003. The main objectives were to address the top priority herpetofauna inventory needs in Glacier Bay National Park and Preserve (GLBA), Sitka National Historic Park (SITK) and

Klondike Goldrush National Historic Park (KLGO). The main goal was to confirm 90% presence/absence of expected amphibian species in these three parks. The expected species lists showed four expected species for GLBA with one documented as "Present", two expected species for KLGO with one documented as "Present", and no expected amphibian species for SITK. Combined, this represents ≤50% documentation of expected amphibians for the SE Alaska parks. (Sharman & Furbish, 2000)

Because of funding limitations, the inventory was designed to accept opportunistic observations reported by field staff while involved in other activities, and was not intended to be a rigorous or comprehensive inventory. The protocol was adapted to easily accommodate records from parks outside of SE Alaska, and a decision was made to include observations from all of the National Parks in the state for convenience and efficiency.

The basic approach to finding amphibians consisted of creating and distributing identification aids and field-forms to staff, volunteers, and researchers in the parks. Completed forms were sent to the author, and then transposed into a database and GIS.

In all, this project recorded five different amphibian species, in ten of the sixteen National Parks from 2001-2003. Because of this project, the known geographic ranges were extended for four of the five species encountered, and much information was gained on species occurrence. This project also began to map species distribution within the Parks, and helped to increase knowledge and awareness of amphibians at the park level.

Species encountered included western toads *Bufo boreas* (Baird and Girard 1852), wood frogs *Rana sylvatica* (LeConte 1825), Columbia spotted frogs *Rana luteiventris* (Thompson 1913, formerly *R. pretiosa*), one rough-skinned newt *Taricha granulosa* (Skilton 1849), and one northwestern salamander *Ambystoma gracile* (Baird 1859).

In addition to the opportunistic inventory, a search was done of the University of Alaska Museum's herpetological holdings. Specimens collected in the National Parks were identified and represent a small (n=58), but significant resource for future studies.

This report also summarizes incidental reports, salient topics for discussion, and outlines known monitoring tools and strategies for future research in this field.

## *Methods and Materials*

### *Study Area*

The area covered by this project is immense. National Parklands in Alaska comprise 52.9 million acres, roughly 14% of all lands in Alaska, and 62.7% of the total lands in the National Park System. The National Parklands in the Southeast Alaska Network (SEAN) is made up of Glacier Bay National Park and Preserve - 3.3 million acres, Klondike Goldrush National Historic Park - 13,000 acres, and Sitka National Historic Park - 113 acres. See Figure 1 for the National Parks in Alaska.

*Table 2. National Park Units in Alaska with Acronyms*

| | |
|---|---|
| ANIA | Aniakchak National Monument and Preserve |
| ALAG | Alagnak Wild River |
| BELA | Bering Land Bridge National Preserve |
| CAKR | Cape Krusenstern National Monument |
| DENA | Denali National Park & Preserve |
| GAAR | Gates of the Arctic National Park & Preserve |
| GLBA | Glacier Bay National Park & Preserve |
| KATM | Katmai National Park & Preserve |
| LACL | Lake Clark National Park & Preserve |
| KEFJ | Kenai Fjords National Park |
| KLGO | Klondike Gold Rush National Historic Park |
| KOVA | Kobuk Valley National Park |
| NOAT | Noatak National Preserve |
| SITK | Sitka National Historic Park |
| WRST | Wrangell-St. Elias National Park & Preserve |
| YUCH | Yukon-Charley Rivers National Preserve |

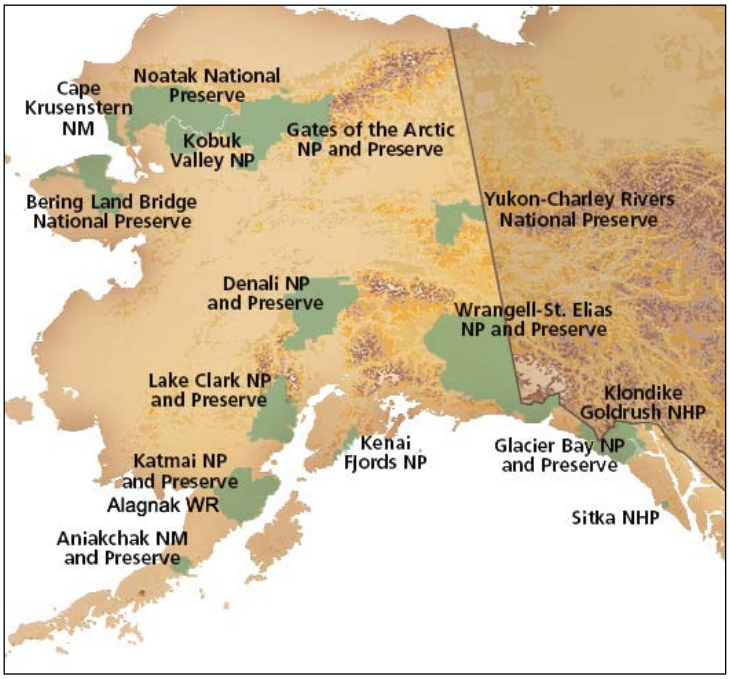



*Figure 1. Map of National Parklands in Alaska*

Because of the size of this study area, and budgetary constraints, a dedicated amphibian inventory was not deemed feasible and a unique, low-cost approach was needed. From its conception, this project was to be an opportunistic approach to take advantage of other fieldwork being done in the parks. National Park staff identified and refined protocol that could be used by all of the parks in Alaska. For the purpose of this program, an inventory was defined as a multi-year, finite project that may, or may not lead to further longer-term comprehensive monitoring work.

### *Data Collection*

As an aid to species identification, field-durable flashcard sets were produced that were easy to use by un-trained but competent observers (park employees and cooperators) during the course of their normal duties (see Figure 2). These identification flashcards were printed to display photographs and drawings, natural history information, and range accounts of expected Alaskan amphibians.


*Figure 2. Photograph of an Adult Western Toad with the Identification Flashcards* by Haken Satvedt

Then, 150 final sets of these flashcards were distributed to park staff and principal investigators. An additional 100 sets were given to local groups, volunteers, and interested members of the public as an educational product. An example of a flashcard may be found in Appendix 2.

Field datasheets were created to be used by field staff for recording detailed information about the observed amphibians, their behavior and habitat (see Appendix 1). These materials were developed prior to the 2001 field season, and observations were gathered throughout the NPS units in Alaska in 2001-2003. The completed field-forms were sent by the observer to the Alaska Support Office and immediately assigned a unique number for tracking.

The submitted information was entered into the relational MSAccess97 database - *Database of Amphibian Observations*. This database was built to conform to the I&M Program's Database Template, with standardized naming and structure to ease assimilation into NPSpecies, the master NPS species database, and was populated with data from the submitted field records. (Database of Amphibian Observations, 2003)

Occasionally, fields were left blank on submitted field-forms. Of all the fields that were commonly left blank by observers, elevation was deemed the most important. If an accurate elevation was entered, it was kept, if no elevation, or an approximate value was entered, a value was given by digitizing the location on a 1:63,360 Digital Raster Graphic interpreted in ArcView GIS. Estimated location error was also widely unreported on datasheets, and when possible was estimated using the source map. If a GPS unit was used to record the location and the accuracy was not reported, the typical accuracy for the particular GPS unit used in the field was entered into the database.

The author retained the original data sheets and accompanying photographs and maps as archives. This resource contains several high-quality photographic and digital images, as well as maps and other information relating to the observations.

## *Data Management*

In this project, a single record was defined as a discrete observation with a unique date and time. Several observations were submitted with the same location (often just a general location), but with different dates, and these were treated as multiple records. Care was taken to record the data as written, but some changes were done for obvious or typographical errors.

Typically, observers did not take the field-forms into the field, though this did happen on occasion in the SE Alaska parks. Normally, the observer recorded their information once they got back into the office.

It is important to point out that observers did not target particular species, places, or habitats. Fortuitous encounters were the norm. The instructions to participants were limited to guidelines for completing the field-form and those found on the identification flashcards.

The accuracy of species identification was not rigorous. If the observation field-form was turned in with a photograph, it was compared for accuracy, but most did not have photos. The observer was asked on the form if they had identified this species before, and records can be queried in the database with this as an accuracy filter.

Location information was converted to decimal degree format for standardization using ArcView3.3. The location datum was kept the same, when possible, to reduce conversion error.

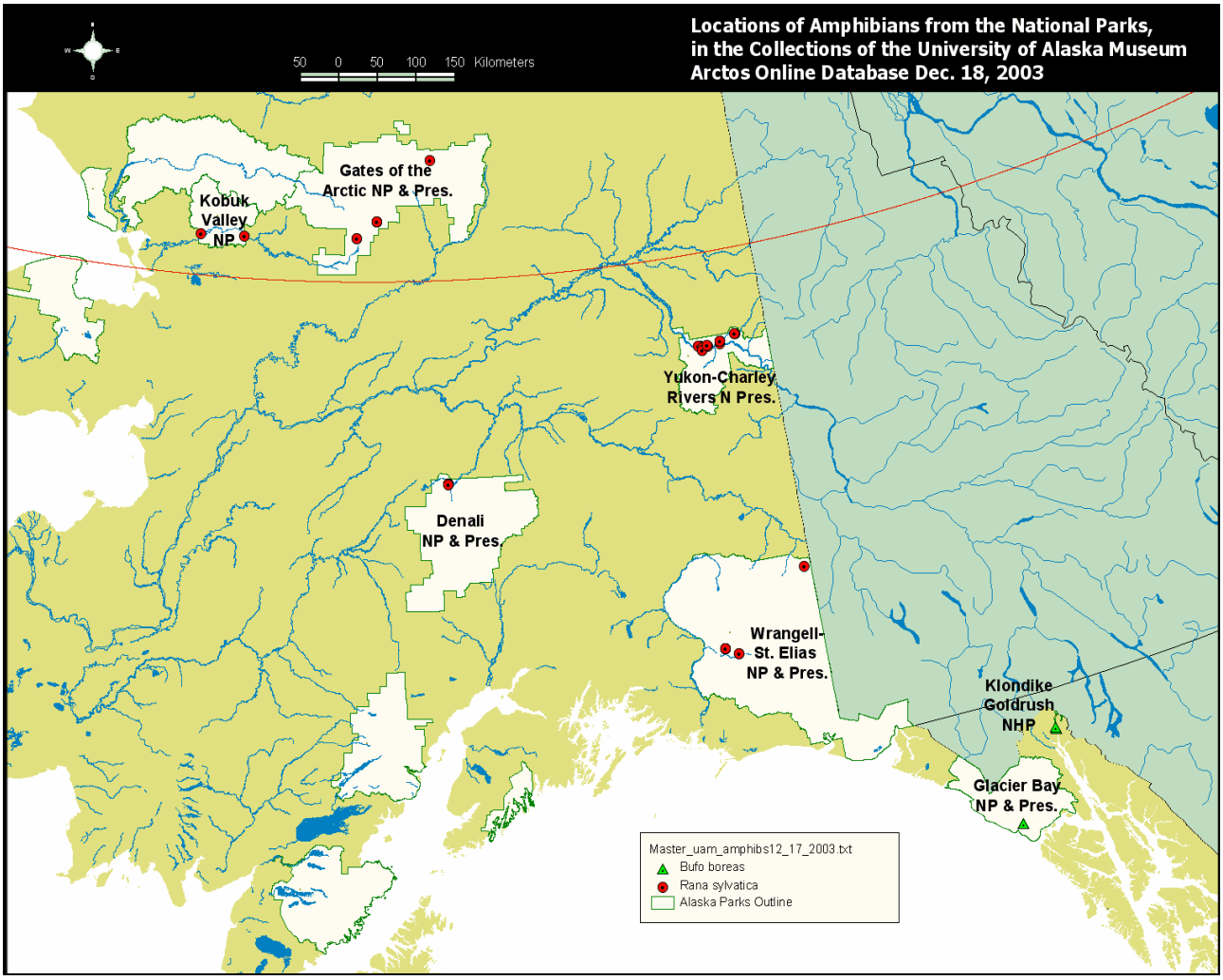
This Access database was exported to a tab-delimited text file, and brought into ArcView3.3 as an event theme. This file was then converted to a shapefile and the attribute table checked for errors. A metadata record for the database and Geographic Information System (GIS) shapefile was also created. This final database and GIS coverage will be housed on the NPS Alaska Region GIS Permanent Dataset to be distributed to the parks through the NPS GIS data cycle.

## *Other Data Sources*

Additionally, a search of the NPSpecies database was done to find observations and vouchers of amphibians that predate this project, and a literature search accomplished to find related studies, historical records, and life history information. From this search, an expected species list was created for each of the parks as a baseline estimate of the species that were known, or thought to occur in the parks.

A search of the University of Alaska's online Arctos Database was done to locate amphibians collected from all National Parks. These were collected as incidental to the small mammal inventory led by Joe Cook and Stephen MacDonald of the University of Alaska Museum. Several other specimens from the parks were also found in the database that were collected prior to this fieldwork. Of the hundreds of amphibians in the holdings, 58 specimens were identified as collected in or near the National Parks. (Arctos Database, 2004) See Appendix 6 and Figure 3 for location and holding information for these specimens. A GIS shapefile was created to show these park specimens in the museum.

*Figure 3. Map of Amphibian Specimens from the National Parks in the University of Alaska Museum, 2004*




In order to increase participation in this volunteer program for the 2003 field season, a set of posters were printed with the past locations of species observations from 2001-2002. Park staff displayed these in conspicuous locations in park headquarters at GLBA and KLGO. A tracking form was placed alongside the poster to record new observations, which were denoted with stickers, and allowed tracking of field forms. See Appendix 7 for a sample of these posters.

In addition, a public website was created to provide additional information to researchers, field staff, and others interested in Alaska's amphibians, and can be viewed at: *http://www.nature.nps.gov/im/units/AKRO/Amphibians/ak_amphibs.htm*

## *Results*

This inventory recorded a total of 15 wood frog observations, 60 western toad records, two Columbia spotted frogs, one Northwestern Salamander, and a single rough-skinned newt. Most of these observations came from within the legal borders of the National Parks. A few, however, were accepted that fell within 1-20km of the boundary. These results are shown in Table 3. Maps of each park unit with all reported locations for this project may be found in Appendix 5.

*Table 3. Number of Amphibian Observations and Individuals by Park Unit*

| *Park* | **Columbia Spotted frog** | **Northwestern Salamander** | **Rough-skinned Newt** | **Western Toad** | **Wood Frog** |
|---|---|---|---|---|---|
| *GAAR* | | | | | 4/13 |
| *GLBA* | | 1/1 | | 38/1342 | 1/2* |
| *KATM* | | | | | 1/2 |
| *KLGO* | 2/2* | | | 22/334 | |
| *KOVA* | | | | | 1/5 |
| *LACL* | | | | | 7/5 |
| *SITK* | | | 1/1* | | |
| *YUCH* | | | | | 1/1 |
| **Species (Total observations/Total individuals)** | | | | | |
| ** Found near the park border* | | | | | |

Of the 79 observations throughout the parks, the large majority of observations came from Glacier Bay National Park and Preserve (40) and Klondike Goldrush National Historic Park (24). This was probably a direct result of the effort to advertise the project and distribute educational materials to all NPS staff at these two parks. Participation by other parks throughout the region was less frequent, though much was learned by even the few observations that were received.

Observers were asked to submit basic habitat information with each observation. Observers were asked to submit basic habitat information with each observation. The choices were constrained to "Freshwater pond / lake", "River", "Salt water / estuarine", "Stream", "Wetland/bog", and "Other". After examination of all the results, the "Other" category was further broken down into "Forested Area" and "Manmade" if appropriate, and was added to the final analysis of habitat types. The results by habitat type, are presented in Table 4.

*Table 4. Number of Recorded Individual Amphibians by Habitat Type*

| **Species** | **River** | **Saltwater/ estuarine** | **Stream** | **Wetland/ bog** | **Freshwater pond / lake** | **Man-made** | **Forest** | **Upland** | **Grand Total** |
|---|---|---|---|---|---|---|---|---|---|
| Columbia spotted frog | | | 1 | | 1 | | | | 2 |
| Northwestern salamander | | | 1 | | | | | | 1 |
| Rough-skinned newt | | | | | | | 1 | | 1 |
| Western toad | 4 | 8 | 39 | 305 | 201 | 1114 | 5 | | 1676 |
| Wood frog | 5 | | 2 | 16 | 11 | | | 4 | 36 |
| Total | 9 | 8 | 43 | 321 | 213 | 1114 | 6 | 4 | 1718 |

Three records were accepted that did not occur in the period 2001-2003. This was done in an attempt to fill in the species distribution for areas that are remote and difficult to access, and for individual species that were not encountered during the 2001-2003 period. The only observations included outside of 2001-2003 were wood frogs on the Kobuk River (1995-98), the northwestern salamander on the outer coast of Glacier Bay (2000), and wood frogs from the Tatshenshini River upstream from Dry Bay (1994).

Another species, *Ambystoma macrodactylum* - Long-toed salamander (Baird 1849), is also native to Alaska (Hodge, 1976), but was not found. Two introduced amphibian species have been verified in the far Southern Panhandle of the state: *Rana aurora* Red-legged frog (Baird and Girard 1852), and *Pseudacris regilla* - Pacific chorus frog (Baird and Girard 1852) (MacDonald, 2003) but were not found through this project.

Table 5 shows the habitat use extrapolated from the field forms for each observation and gives totals by park unit.

*Table 5. Number of Amphibian Observations by Park and Habitat Type*

| Park Code | Habitat | Columbia spotted frog | North-western salamander | Rough-skinned newt | Western toad | Wood frog | GRAND TOTAL |
|---|---|---|---|---|---|---|---|
| GAAR | Freshwater pond / lake | | | | | 1 | **1** |
| | Wetland/bog | | | | | 3 | **3** |
| ***GAAR Total*** | | | | | | ***4*** | ***4*** |
| GLBA | Forested Area | | | | 5 | | **5** |
| | Freshwater pond / lake | | | | 6 | | **6** |
| | Manmade | | | | 4 | | **4** |
| | River | | | | 2 | | **2** |
| | Salt water / estuarine | | | | 7 | | **7** |
| | Stream | | 1 | | 11 | | **12** |
| | Wetland/bog | | | | 3 | 1 | **4** |
| ***GLBA Total*** | | | ***1*** | | ***38*** | ***1*** | ***40*** |
| KATM | Wetland/bog | | | | | 1 | **1** |
| ***KATM Total*** | | | | | | ***1*** | ***1*** |
| KLGO | Forested Area | | | | 6 | | **6** |
| | Freshwater pond / lake | 1 | | | 1 | | **2** |
| | Manmade | | | | 2 | | **2** |
| | Stream | 1 | | | 4 | | **5** |
| | Wetland/bog | | | | 9 | | **9** |
| ***KLGO Total*** | | ***2*** | | | ***22*** | | ***24*** |
| KOVA | River | | | | | 1 | **1** |
| ***KOVA Total*** | | | | | | ***1*** | ***1*** |
| LACL | Freshwater pond / lake | | | | | 6 | **6** |
| | Other | | | | | 1 | **1** |
| ***LACL Total*** | | | | | | ***7*** | ***7*** |
| SITK | Forested Area | | | 1 | | | **1** |
| ***SITK Total*** | | | | ***1*** | | | ***1*** |
| YUCH | Wetland/bog | | | | | 1 | **1** |
| ***YUCH Total*** | | | | | | ***1*** | ***1*** |
| ***GRAND TOTAL*** | | ***2*** | ***1*** | ***1*** | ***60*** | ***15*** | ***79*** |

## *Wood Frogs*

Wood frogs have a vast range covering most of Alaska, and not surprisingly, they were found from the Kobuk River to the Alaska-Yukon border, from the Tatshenshini River to the Brooks Range. Individuals of this species were typically encountered in lower elevations, and often near large lakes and rivers. Habitat included wetlands, uplands far from water, and even recently burned areas. No tadpole or egg-laying sites were found, though this is not surprising since this species will often commence egg-laying in water that is still partially frozen in early Spring. Their ability to survive above the Arctic Circle is a true wonder of natural selection and adaptation to the cold.

Rana sylvatica was confirmed inside the boundaries of four parks during the study period; KATM., LACL, DENA, WRST, YUCH, and GAAR. Individuals from the years 1994-1998 were recorded from past records in KOVA and GLBA. Table 6 outlines these observations.

*Table 6. Submitted Wood Frog Records by Park and Year*

| PARK<br>*Year* | GAAR | GLBA | KATM | KOVA | LACL | YUCH |
|---|---|---|---|---|---|---|
| *1994-2000* | 0 | 1 | 0 | 1 | 0 | 0 |
| *2001* | 2 | 0 | 0 | 0 | 0 | 0 |
| *2002* | 0 | 0 | 1 | 0 | 1 | 0 |
| *2003* | 2 | 0 | 0 | 0 | 6 | 1 |
| *Total* | 4 | 1 | 1 | 1 | 7 | 1 |

The Small Mammal Inventory crews also collected wood frogs that were inadvertently collected in their traps in addition to their main mammal collection effort. These specimen were sent the University of Alaska for confirmation and preservation in the Fairbanks holdings. Appendix 6 lists these specimens.

Two additional unrelated studies were done by NPS staff in 2002 and are notable. Ami Wright of Kenai Fjords National Park conducted a wood frog calling survey in the Exit Glacier area but did not find any calling activity (Wright, 2002). Jim Wilder of WRST duplicated a wood frog calling survey from 1991-93 at sites along the McCarthy road in 2002. He found that overall frog abundance was as much, or more than in 1990 (Wilder, 2002). This project's observations were also built into a GIS Shapefile for future monitoring work.

### Denali National Park & Preserve

The Small Mammal Inventory collected ten specimens at Chilchukabena Lake in the far NW corner of the park and sent them to the UA Museum in 2002. (Arctos Database, 2004)

NPSpecies also lists four observations from 1978-1981 on the north side near Wonder Lake.

Anecdotal evidence indicates that the dry winter of 2002-03 was particularly difficult on wood frogs in the Healy/ McKinley Village area. Many persistent ponds and wetlands dried up, and few wood frogs calls were heard in the spring. (Blakesley, pers. comm., 2003)

Apparently, more work has been done in this park on wood frogs, but a search for documentation provided no sources, and no other observations were found.

### Gates of the Arctic National Park & Preserve

Wood frogs were found in several locations in the south-side lowlands near large lakes in GAAR (Figure 1). Frogs were found in the Arrigetch Peaks area of the park around Takahula Lake in 2001. The University of Alaska Museum Arctos Database also houses several specimens collected in this vicinity in 2002.

A single specimen from Anaktuvak Pass is also housed at the museum, but the exact location it was collected is uncertain. It should be noted that there are unverified accounts of wood frogs on the North Slope and Coastal Plain on the north side of the Brooks Range. (Arctos Database, 2004)

*Figure 4. Two photos of adult wood frogs found within 1km of each other at Walker Lake*
by Adam Liljeblad NPS GAAR.

Individuals were not formally trained to recognize amphibian vocalizations, but two records of wood frog calls in GAAR were submitted from June 2003. A member of the Artic Network montane-nesting shorebird inventory with prior experience with this species heard this species at two sites near Walker and Nutuvukti Lakes at the southern base of the Brooks Range. It should be noted that both of these lakes drain into the Kobuk River watershed. Wood frogs are know to gather into groups for mating in the spring and early summer. Recorded concentrations of this species are listed in Table 7.

*Table 7. Wood Frog Congregations by Observed Date*

| *Park Code* | *Species* | *Life Stage* | *Habitat* | *Count* | *Observe Date* |
|---|---|---|---|---|---|
| GAAR | Wood frog | Adult | Wetland/bog | 5 | 6/1/2003 |
| GAAR | Wood frog | Adult | Wetland/bog | 5 | 6/1/2003 |
| GAAR | Wood frog | Adult | Wetland/bog | 5 | 6/3/2003 |
| GAAR | Wood frog | Adult | Wetland/bog | 5 | 6/3/2003 |
| LACL | Wood frog | Adult | Other | 4 | 7/13/2003 |
| LACL | Wood frog | Adult | Freshwater pond lake | 3 | 7/26/2003 |

### Glacier Bay National Park & Preserve

Chad Soiseth of GLBA submitted historic observations of wood frogs on the Tatshenshini River from 1994, seen 15-20km upstream of the park boundary and 70km from Dry Bay. He surmised that they have most likely made their way to the Dry Bay area of the park by now.

### Katmai National Park & Preserve

The single individual was observed by the leader of the Inventory and Monitoring Program's vascular plant inventory near Swikshak Cabin on the Katmai coast. This was the only submitted observation from this park, but allowed this species to be upgraded from "Expected" to "Present" in NPSpecies. (NPSpecies, 2004)

### Kenai Fjords National Park

Ami Wright's wood frog calling survey in 2002 is of note as wood frogs have been observed in the Seward area, and yet remain undocumented in KEFJ. Additionally, several *R. sylvatica* observations were submitted from the Kenai River drainage near Soldotna, but were not included in the database due to concerns over their distance from any of the Park's watersheds.

### Kobuk Valley National Park

Kobuk Valley NP has only a few observations from the Kobuk River. Mike Shnorr, while with the NPS, reported several observations along the Kobuk River at the Kallarichuk Field Station for the years 1994-1998. These observations were included even though they fell outside the dates of this inventory effort because of their value for the park.

The Univ. of Alaska Museum had two specimens that in 2003 were attributed to Noatak National Preserve, but their location information put them squarely in KOVA, along the Kobuk River. This discrepancy was reported to the Museum curator, and they have since been updated. (Arctos Database, 2004)

### Lake Clark National Park & Preserve

A number of people observed frogs in several locations along the shores of Lake Clark, and Two Lakes.

Penny Knuckles, former Resource Manager at LACL submitted informal wood frog calling dates to the author and locations for the past decade. According to her, wood frogs started calling on the following dates at Port Alsworth: 5/13/99, 4/30/00, 4/30/01. She also noted wood frogs near the north-eastern corner of Lake Clark on 6/16/02.

*Figure 5. Photo of a Sub-adult Wood Frog on the Shoreline of Lake Clark*
by Dan Young, NPS LACL

Knuckles also saw wood frogs at the beaver pond near the Tanalian Falls Trail in June of 1999 and 2000. Adults were commonly seen around the northern edges of the pond and below the beaver dam. No tadpoles were ever seen.

NPSpecies lists two observations dating from 1978-79 at Browne Carlson's cabin site, and at Keyes Point, respectively. (NPSpecies, 2004)

**Yukon-Charley Rivers National Preserve**

The associated small mammal inventory also collected 15 wood frogs from several sites in YUCH in 2001 and sent them to the University of Alaska Museum.

This preserve had the only wood frog reported with a deformity - a missing foreleg on a dead adult frog found on the bottom of a wetland along the Yukon River. The observer speculated that it was caused by predation from fish observed in the same water-body.

Although several photographs of wood frogs taken in 1999 were submitted to the author, observations were not recorded. At least one of these individuals was found in a freshly burned area near the Yukon River.

**Wrangell – St Elias National Park & Preserve**

In 2001, ten specimens were collected for preservation by the small mammal inventory and sent to the University of Alaska Museum from Chokosna Lake and Ruby Lake near the McCarthy Road. A single specimen collected from the far NE corner of the Park from the Camden Hills, also resides in the museum. (Arctos Database, 2004)

NPSpecies lists two observations from 1991-92 on McCarthy Road. (NPSpecies, 2004)

Additionally, the work done by Jim Wilder in 2002 along the McCarthy Road added information to this park's known locations of wood frog breeding sites, and provides an opportunity for a long-term monitoring project.

## *Western Toads*

*Bufo boreas* was the most documented species, and was widely found in both KLGO and GLBA in a variety of habitats and elevations. As expected, this species was only found in these Alaskan parks. Basic results by park unit are given in Table 8.

No large congregations of adults were seen, though a number of tadpole locations were found in both GLBA and KLGO. This species has been found in large numbers by other researchers in the SE Alaska area, but early in the spring, and by trained staff.

*Table 8. Submitted Western Toad Records by Park and Year*

| **PARK** | **GLBA** | **KLGO** |
|---|---|---|
| *Year* | | |
| *2001* | 17 | 0 |
| *2002* | 8 | 6 |
| *2003* | 13 | 16 |
| *Total* | 38 | 22 |

**Glacier Bay National Park & Preserve**

In the 1980s, former park employee, Michael Taylor, found that western toads are physiologically well-suited for the cold, saline waters of Glacier Bay, and he speculated on dispersal techniques within the bay. He observed toads accidentally entering swift glacial streams and being washed into the saltwater, whereupon, they would swim for land. Often, they were *not* heading for the nearest shore and a few were observed swimming well away from land, apparently doing quite well. (Taylor, 1983) Since this work, little, if any, research has been done on amphibians in the park, and their population, range, status, and habitat requirements are still not known.

This species was found in Glacier Bay in a variety of habitats and elevations. Several observations came from areas that have been very recently glaciated (30-100 years) including the Hugh Miller Glacier moraine (1900s) and Wachusett Inlet (1960s). (American Geographical Society, 1966)

A significant breeding area for *B. boreas* (n=1000+ tadpoles) was found near the SE end of the Gustavus Airport outside of the park. This site is unusual in that it is a manmade borrow pit created for gravel extraction. This site, and other discovered concentrations of toads, is shown in Table 9.

*Table 9. Western Toad Congregations by Observed Date*

| Park Code | Species | Life Stage | Habitat | Count | Observe Date |
|---|---|---|---|---|---|
| GLBA | Western toad | Tadpole | Manmade | 900 | 6/17/2002 |
| GLBA | Western toad | Tadpole | Manmade | 200 | 7/4/2002 |
| GLBA | Western toad | Tadpole | Freshwater pond lake | 125 | 7/22/2002 |
| GLBA | Western toad | Tadpole | Freshwater pond lake | 40 | 6/3/2003 |
| GLBA | Western toad | Tadpole | Freshwater pond lake | 30 | 7/2/2003 |
| KLGO | Western toad | Tadpole | Wetland/bog | 75 | 7/10/2003 |
| KLGO | Western toad | Tadpole | Wetland/bog | 20 | 7/13/2003 |
| KLGO | Western toad | Tadpole | Wetland/bog | 200 | 7/14/2003 |
| KLGO | Western toad | Tadpole | Stream | 20 | 8/1/2003 |

Toads were widely found at elevations ranging from the tideline at sea level, to nearly 1000 meters in climax muskeg. Many were discovered in the Bartlett Cove forest surrounding park headquarters, and out on the Bartlett River Trail.

The species often showed up in surprising places. Several were encountered in the saltwater intertidal zone, amongst the flotsam washed up on shore by tides and storms. One was saved from a bucket that had washed up and filled with rainwater, and another was rescued from a windowsill in the Bartlett Cove employee housing area. Notably, park staff from the NPS Coastwalker Program, led by Lewis Sharman, made quite a few valuable observations in the intertidal area of the park.

*Figure 6. Photo of an adult Western Toad rescued from a bucket on a beach in Glacier Bay*
*by Daniel VanLeeuwen, NPS GLBA.*

Three observations from the end of the summer noted that the individuals moved quite slowly, probably due to colder temperatures, though a lack of food sources could also be a factor.

Only one toad was reported with a significant deformity, though a few were missing digits. Polydactyly was reported on an individual near Wachusett Inlet in GLBA with six toes on the rear feet. It should be noted that observers were not trained to identify deformities, and typically did not check individuals for them. All reports of deformities came from a single researcher in this area.

Three dead individuals were reported on the various roadways in and around the park, and all were apparently run over by vehicles.

Although it would be inappropriate to infer population trends based on the results from this type of inventory, there is anecdotal information suggesting a significant downward population decline of western toads in the Gustavus, Alaska area. This project generated numerous incidental anecdotes from residents of the area who remember impressive seasonal abundance of adult toads, particularly in the rainy fall season. Reports of having to watch where a person stepped due to the number of toads everywhere were common. One long-term resident discussed the area once being "lousy" with toads, and having to stop their car to wait for toad migrations across the roadways. (Sharman, pers. comm., 2003)

In addition, the search of the University of Alaska Museum found five specimens from the Dixon River on the outer coast that were collected inside Glacier Bay National Monument in 1974, and add information from a rarely visited area of the park. (Arctos Database, 2004)

**Klondike Goldrush National Historic Park**

Most of the records from this park came from the Chilkoot Trail Unit, with many from folks walking the Chilkoot Trail. A few upland observations occurred in the White Pass unit as well, though.

*Figure 7. Photo of a subadult Western Toad*
*by Denny Capps, NPS KLGO*

The Natural Resources Staff discovered a significant breeding site for the species on the Dyea Flats in 2002. Numerous tadpoles, toadlets, and subadults were seen by staff in, or near, standing water when they revisited this area throughout the summer. One toadlet was observed here and photographed by Meg Hahr at the end of September (see report title page).

A single toad was recorded on a street in downtown Skagway, and apparently is able to utilize marginal and manmade habitats like the toads of Glacier Bay.

Beth Koltun, NPS, reported western toads along the Chilkoot Trail in the same wetland as Columbia spotted frogs across the border in Canada. See the next section for more information and Figure 8.

Two toad specimens collected from this park in 1982 and 1995 exist at the UA Museum, though there is significant location error to cause doubts as to whether they were collected inside park boundaries. Efforts were made to find a more precise location for the specimens through the original collectors but neither could remember the exact location of the specimen due to the fact that they were collected decades ago. However, the location description in the database would place both inside the park. Gordon Jarrell of the UA Museum is aware of the situation, but is hoping for more substantial evidence before changing the designation, though it is probably not worth the effort. They were both collected near the park, and would most likely be included in any subsequent studies, due to their proximity. (Arctos Database, 2004)

## *Columbia Spotted Frog*

Individuals hiking the Chilkoot Trail recorded both of the Columbia Spotted Frog observations, and both were located in Canada. None was found inside the boundaries of Klondike NHP, apparently because of the differing ecology of the two ends of the trail. These, and all other species, are listed in Table 10.

*Table 10. Submitted Records for Other Species by Park and Year*

| PARK<br>*Year* | SITK Rough-skinned Newt | GLBA NW Salamander | KLGO Columbia Spotted Frog |
|---|---|---|---|
| *1998-2000* | 0 | 1 | 0 |
| *2001* | 0 | 0 | 0 |
| *2002* | 0 | 0 | 1 |
| *2003* | 1 | 0 | 1 |
| *Total* | 1 | 1 | 2 |

*Figure 8. Photo of a Columbia Spotted Frog on the Chilkoot Trail in Canada*
*by Beth Koltun, NPS AKSO*

On only one occasion was a reported species identification changed. The Columbia Spotted Frog in Figure 8 had been reported as a wood frog. This change was possible only because a high-quality photograph was taken by the observer, and only after careful review by a number of knowledgeable researchers.

## *Other Species*

A single northwestern salamander was documented along the outer coast of GLBA in Graves Harbor under a log in a riparian needle-leaf and alder area in a stream on the SE arm, about 200m from shore. Though it was observed in 2000, before this project began, it is still an important find. A small crew from GLBA attempted to relocate the observation site in 2003, but did not have an accurate location description to use. This sighting is an interesting addition to the known range of the species (MacDonald, pers. comm., 2003). Stephen MacDonald, of the UA Museum, and other researchers are interested in this location and population.

The final species reported for this project was a single rough-skinned newt identified and photographed on Rockwell Island, 1.5km from the tidal boundary of Sitka NHP (SITK) along a forested trail. This is a small island with a lighthouse in Sitka Sound at the end of the Sitka Airport runway. A photograph of this individual can be seen in Figure 10.

Finally, there are no salamander specimens in the UA Museum collection, and all of the rough-skinned newts come from the Petersberg/ Craig/ Ketchikan areas. Additionally, there are several Columbia spotted frogs in the collection, but none from the National Parks. (Arctos Database, 2004)

## *Discussion*

This project contributed significantly to the known locations of amphibians throughout the state of Alaska. As a direct result of observations, the known geographic ranges of wood frogs, western toads, rough-skinned newts, and north-western salamanders were extended by this project. This inventory also confirmed the presence of many species that were expected, but not known, to occur in the many of National Parks of Alaska. Amphibians were found, in or near, ten of the sixteen parks.

Most likely, these gains were made in documenting the amphibian biodiversity in Alaska's National Parks because so little is known about these species. All five of the expected species were encountered, admittedly, by stretching the dates of accepted observations. By accepting evidence from a variety of sources, and from historic records outside the range of the initial project, this project was successful in determining the amphibian biodiversity of our parks.

It was also successful in raising the awareness of National Park Service staff about amphibian issues and the species in their parks through the use of announcements, presentations, posters, and other publicity.

*Table 11. Suggested NPSpecies Park Status for Amphibian Species of Alaska's National Parks Before and After This Project*

| *Year* | *2002* | *2004* | *2002* | *2004* | *2002* | *2004* | *2002* | *2004* | *2002* | *2004* |
|---|---|---|---|---|---|---|---|---|---|---|
| **Park Name** | **Columbia spotted frog** | | **Northwestern salamander** | | **Rough-skinned newt** | | **Western toad** | | **Wood frog** | |
| Alagnak Wild River | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E |
| Aniakchak National Monument and Preserve | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E |
| Bering Land Bridge National Preserve | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E |
| Cape Krusenstern National Monument | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E |
| Denali National Park & Preserve | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E | Present | Present |
| Gates of the Arctic National Park & Preserve | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E | Probably Present | Present |
| Glacier Bay National Park & Preserve | Probably Present | Probably Present | Probably Present | Present | Probably Present | Probably Present | Present | Present | Probably Present | Probably Present |
| Katmai National Park & Preserve | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E | Present |
| Kenai Fjords National Park | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E | Probably Present | Probably Present |
| Klondike Gold Rush National Historic Park | Probably Present | Encroaching/ Adjacent | N/E | N/E | N/E | N/E | Probably Present | Present | Probably Present | Probably Present |
| Kobuk Valley National Park | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E | Present | Present |
| Lake Clark National Park & Preserve | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E | Present | Present |
| Noatak National Preserve | N/E | N/E | N/E | N/E | N/E | N/E | N/E | N/E | Probably Present | Probably Present |
| Sitka National Historic Park | N/E | N/E | N/E | N/E | N/E | Encroaching/ Adjacent | N/E | Encroaching/ Adjacent | N/E | N/E |
| Wrangell-St. Elias National Park & Preserve | Probably Present | Probably Present | N/E | N/E | N/E | N/E | Present | Present | Present | Present |
| Yukon-Charley Rivers National Preserve | N/E | N/E | N/E | N/E | N/E | N/E | Probably Present | N/E | Probably Present | Present |

*N/E = Not Expected (to occur in, or near the park)*

The most notable and surprising observations are the northwestern salamander on the outer coast of Glacier Bay, the wood frogs on the Tatshenshini River, the rough-skinned newt near Sitka. These finds have stretched the known

scientific ranges of the species, and could contribute greatly to scientific understanding well beyond this project. Other substantial finds include the discovered breeding sites of western toads near Gustavus and Skagway.

Though this project most likely met the basic goal of documenting 90% of amphibian species in the SE Alaska National Parks, it was not adequate to answer the critical question of abundance, distribution, or population trends. This project was a cost-effective simple baseline inventory. There are still significant gaps in understanding even basic habitat utilization in Alaska.

It is important to note the limitations that exist in this type of inventory. The first is a lack of absence data. Amphibian species were not systematically searched for, and thus no inference may be made as to either absence, or abundance estimation. Furthermore, it would be inappropriate to try to enforce statistical integrity. This project was an opportunistic inventory, and by its nature, introduces a certain level of randomness. One never knows where an observer is likely to encounter an amphibian, and this methodology was therefore deemed an adequate baseline estimation to guide further focused study, yet is not adequate to presume trends.

Compared to many other areas of Alaska and the Yukon, the National Parklands have a herpetological biodiversity. Little further effort would be required to expand the knowledge of these amphibian species. Noteworthy results are outlined below for the SEAN parks and the rest of the state.

A main goal of this project was to update, and make more accurate, the basic presence/absence status in NPSpecies, the master National Park Service species database. Table 11 lists the park status as found in this database from before this project (2000) and the suggested park status (2004) which includes the results of this project by the author. (NPSpecies, 2002, 2004)

## *Glacier Bay National Park and Preserve*

Evidently, the western toad abundance of the past is no longer, and the cause, or causes, should be investigated thoroughly. Finding the reasons for amphibian declines are universally both an urgent and a sensitive issue (Heyer *et al.*, 1994).

The land in the Gustavus and Dry Bay areas is rising as much as 18-22 millimeters per year (Larsen et al., 2003). Glacial isostatic adjustment is possibly contributing to the declines seen in the Glacier Bay area due to wetland loss. (Sharman, pers. comm., 2003) A decrease in wetland habitat has been noted in the Gustavus area by NPS researchers and others. A chronological comparison using aerial imagery and other remote sensing products would be a useful tool in estimating wetland loss and would presumably shed light on many of the parks natural resources.

Of particular interest for additional study in GLBA are the western toad tadpole locations. Chad Soiseth, Aquatic Ecologist, identified an easily accessible western toad-breeding site near the Gustavus Airport, where hundreds of tadpoles are annually observed, and could provide an excellent long-term monitoring site. This site is unique in that it is a borrow pit in a former gravel extraction area, and could provide insight into the habitat needs of the species, and how to provide artificial habitat enhancements. Teachers at the local Gustavus School are interested in getting students involved to monitor amphibian populations, and other science aspects of this possible educational outreach project. It should also be noted that this site is not protected from damage by vehicles, gravel extraction, and other damaging uses, and is outside of the park boundaries. However, it is near enough that there may be migration between this site and the park.

Observers regularly found western toads in areas of the park that have only been free of glacial ice for 35-50 years (Am. Geographical Society, 1966). Somehow, toads are finding suitable breeding sites, food, and shelter in this austere environment, but it is not understood how this species uses this habitat for survival. Their presence in intertidal areas suggest that they exploit this environment for food. Because the presence of fish have been found to contribute greatly to mortality of tadpoles (Brockelman, 1969), this species may have found that post-glacial outwash streams have few predators, and that the food abundance in the intertidal zone supports their needs.

*Figure 9. Photograph of a Large Adult Western Toad*
*by Nat Drumheller, NPS GLBA*

Wood frogs were found 20 km upstream of the park border on the Tatshenshini River, but have not been found within the park's borders. Downstream, the Dry Bay area would be a likely place to find this species, and would be a

significant range extension, as well. Additionally, this area is also experiencing substantial post-glacial uplift, and could be compared to the Gustavus area for wetland drying and other issues.

Finally, additional work could be accomplished to confirm the presence and abundance of northwestern salamanders on the outer coast of GLBA. The presence of one uncollected and unphotographed individual is not enough to conclude anything about this little known species. If confirmed this would be the northernmost limit of the species range and would represent an important addition to the known range and habitat of the species, and therefore warrants attention. According to Stephen Mac Donald, land-based vertebrate species found in the old-growth glacial refugia in GLBA are proving to be genetically unique and could be a source of important information on plate tectonics, species migration, and phylogeny. (MacDonald, pers. comm., 2003)

## *Klondike Goldrush National Historic Park*

This park unit promises to surpass GLBA in amphibian biodiversity. The ranges of wood frogs, western toads, Columbia spotted frogs, and northwestern salamanders converge in the Chilkoot/ White Pass areas. Only two species were found throughout this project, but more are expected to inhabit this park.

The tadpole sites discovered on the Dyea flats in KLGO, represent an easily accessible breeding site for western toads, and could be studied over time for population trend monitoring and other studies. The recorded dates for many of the tadpole and subadults found here were surprisingly late in the year for survival through the winter. Observers were finding tadpoles in 2003 as late as mid August and subadults in late September.

The Columbia spotted frog is a highly aquatic species and is apparently commonly seen floating in still water of the wetlands draining into Deep and Lindeman Lakes in the Chilkoot Trail Unit. According to several reports, this population of frogs, and the close proximity they keep with western toads, is well documented and known to Parks Canada staff and Canadian researchers, but no reports on the subject were located in a literature search.

The Chilkoot Trail begins at nearly sea level, in marine mudflats, and rises through a coastal rain forest to 1081m at the high alpine pass, then drops through the boreal forest to the end of the trail at Lake Bennett in Canada at 640m in elevation. Steep slopes, habitat changes and differing climactic conditions from Sheep Camp up to the top of the pass apparently keeps Columbia spotted frogs from emigrating to the US. Little similar habitat exists in the US side of the border but the lakes and wetlands that begin at the US - Canada border on White Pass and continue northward to Fraser, and beyond, are promising habitat. They might also be found in the streams and flats in the northwestern edge of the park and around Summit Lake near White Pass.

The White Pass unit of KLGO does not get as many hiking visitors as the Chilkoot Trail, and the presence/absence of amphibians from this unit is less known. Western toads might be found in the lowlands but would not be expected in the steep riverine valleys of the unit, though it is similar to the Chilkoot Trail in elevational gradient and climatic conditions.

The park's wildlife observation database has a couple of accounts of salamanders in the Dyea area near the hiking bridges and streams. If found, this would be a significant range extension for the species.

## *Sitka National Historic Park*

The single rough-skinned newt near SITK is interesting and could be investigated with a targeted search in the park using similar low-cost methodologies as KLGO salamanders. According to Jack Whitman of the US Fish and Wildlife Service, Galankin Island has a colony of rough-skinned newts, which is in the same general area as Rockwell Island. Bamdoroshni Island was also surveyed but with no success. He also had surveyed the mainland Baranof Island and did not find newts, though they were collected on northern Chichagof Is. He suspects that the Sitka Sound island populations were transplanted, possibly by Alaskan Natives, long ago. (Whitman, Jack 2004, personal comm.)

*Figure 10. Photo of the Rough-skinned Newt on the Shoulder of Kathryn Griffin by Gene Griffin NPS SITK*

Though this individual was observed outside the park, it confirms that the species should continue to be listed on SITK's Expected Species List.

Western toads have been found in the Sitka area, not far from the park, though they have not been documented inside SITK borders. From a cursory investigation by the author in 2003, few breeding ponds exist on park property, though as the forest ages, this will probably change. A further investigation could be conducted to compare water quality parameters, specifically pH levels from conifer needle duff, and habitat suitability of nearby waters that have western toad populations compared to those inside the park.

## *Other Parks*

Other parks did not participate to the level of GLBA, and KLGO, but many benefited from this project because of several observations, some of them adding the species to the park species list for the first time.

Wood frogs continue to surprise. Their physiology of this species, and ability to survive in the high latitudes, is remarkable. The widely scattered observations from this project have helped to fill in the known range of the species, but little is known about their ranges within the parks.

One might infer, from the few observations, that they can be found with regularity near large bodies of water like Lake Clark and Walker Lake. Though this is probable given the marginal habitat in these locations: the localized climatic effect of large bodies of water may provide a slightly longer season for wood frogs, and may allow slower entry into physiological hibernation. It could also be because these locations are the most easily accessible to humans, and frogs were encountered because that is where the observers were the most common, and not necessarily the frogs. However, this is an intriguing theory, and could provide insight into the ecology of the Arctic and Sub-arctic Lake systems.

Western toads are listed as "Probably Present" in NPSpecies for YUCH. Finding this species would be a surprising this far from it's preferred habitat in the coastal temperate rainforest, and is probably not appropriate.

Additionally, anecdotal evidence from the Healy/ Denali area indicates that seasonal abundance, as noted by vocalization, may be linked to pond and wetland drying in these areas. (Blakesley, Andrea 2003, personal comm.)

As for western toads in other parks, NPSpecies lists only a single observation in Icy Bay from 1989 for Wrangell St-Elias National Park and Preserve. (NPSpecies, 2004) Significant habitat exists along the WRST coast (notably a very remote place with very real logistical difficulties), and the area would be very important in any phylogenetic study of the species.

Finally, Laurel Bennett, of the Southwest I&M Program, told the author of a firsthand report by a subsistence hunter of salamanders on the West Foreland area northeast of LACL on Cook Inlet. Though this area is outside of the park, this report is noted here for its interest to researchers. If there is a population of salamanders in this area, it is either an introduced species, or has been isolated from the rest of the SE Alaska population since glaciers filled Cook Inlet, and could be of great ecological and taxonomic significance.

## *Conclusions / Potential Future Monitoring Needs*

In February of 2004, Richard Carstensen of Discovery Southeast reported to the author that his project to identify amphibian habitat in the Taku River area and around Juneau failed to find any western toads in many wetlands and ponds previously documented to have toads in recent years. He relayed his concern that amphibians are absent from many waters that have not been impacted by human encroachment, but has not found a cause to date.

Kim Trust, of the US Fish and Wildlife Service continues to find a significant number of severely malformed wood frogs on the Kenai Peninsula, in the Kenai National Wildlife Refuge. (Trust, Kim, pers. comm. 2004) This cause is not known, and a major effort is underway by a variety of agencies to seek answers.

The apparent declining populations in the Gustavus Flats area should be a high priority for further research, and one likely cause to be studied may be post-glacial uplift and accelerated wetland drying, though this may only be a part of the story.

Given these realities, and the documented declines of many of these same species in the lower 48 states, it would seem prudent to establish population trends for all of the amphibians in the parks. In addition to protecting sensitive species, keeping common species common as an intrinsic value of any future management decisions would seem to be a wise approach. Adopting an appropriate protocol for further research will be necessary in order to share information on species distribution and population trends. (Heyer et. al 1994)

It is recommended by many researchers, that future studies of amphibians in Alaska's National Parks adopt a standardized protocol, database standards, and reporting requirements, in order to share results with other agencies in the state and to detect widespread amphibian population fluctuations, and most importantly, declines. There are many protocols available for establishing population estimates and landscape distribution of amphibian species. Recent work to standardize inventory methods has led to much more accurate population trend detection. Heyer's *Measuring and Monitoring Biological Diversity: Standard Methods for Amphibians* is an excellent place to begin when designing an amphibian inventory or monitoring project.

The USGS Amphibian Research and Monitoring Initiative (ARMI) was designated as the interagency task force for the Department of Interior in the lower 48 states. Admittedly, they have not done any work in Alaska to date, but several of their research scientists are very interested in expanding the scope to this state soon. More information on this program can be found on the internet at: *http://armi.usgs.gov*

In addition to ARMI, the Department of Interior sponsors or participates to some degree in several programs to monitor the diversity and health of amphibian populations across the nation.

*Other National Amphibian Programs*

*The U.S. Fish & Wildlife Service-Amphibian Malformations*
The USFWS is interesting in identifying the cause, or causes, of malformations when such specimens are found, and providing management guidelines for wildlife refuges and other land managers to address associated problems.

*Partners in Amphibian and Reptile Conservation (PARC)*
PARC is a new multi-sector partnership dedicated to the conservation of amphibians and reptiles and their habitats. Participants include State and federal agencies, the private sector, conservation societies, and the academic community.

*FrogWeb*
A web-based resource developed by the USGS National Biological Information Infrastructure (NBII). A broad, collaborative program dedicated to providing increased access to data and information on the nation's biological resources, FrogWeb provides access to information and educational materials on amphibian declines and malformations.

*FrogWatch USA*
An educational frog and toad monitoring program started by the USGS in 1999. The program relies on citizen volunteers to gather information throughout the US.

Many targeted wood frog protocols have been developed for calling surveys. (Heyer, 1995). Wood frog calling surveys like the ones done in KEFJ and WRST, are another low-cost, but meaningful monitoring project that can be done with a minimum of effort and personnel in early spring. Over time, these surveys will show population trends, seasonal climatic variation, and could be utilized, with careful planning, to evaluate wetland drying and habitat loss. A study of wood frogs in YUCH would be particularly good for understanding how they have adapted to the regular wildfire regime in northern Alaska.

More intensive, but simple, methods, could be utilized to verify whether or not species near the park borders are actually inside the boundaries with little effort or monetary outlay by using trained herpetological researchers and trained field staff.

A number of protocols and initiatives are designed to use schools and other volunteers for data collection, reporting, and monitoring amphibians. The western toad tadpole locations near the Gustavus Airport would make an excellent, low-cost, and easily accessible, site for an educational and outreach project by the National Park Service.

An important work to map the known locations and ranges of the states herpetofauna was published by Stephen MacDonald of the University of Alaska Museum. There is a significant absence of verified location information in and around the National Parks of Alaska. (Arctos Database, 2003). All subsequent studies of amphibians by the National Park Service would be prudent to consult closely with the author of this publication and the UA Museum in order to share information with this important effort.

Gordon Jarrell and Stephen MacDonald of the UA Museum are currently working on protocol to accept photographic vouchers of amphibians and other sensitive species. Most of the National Park-collected specimens at the museum are currently reserved from use by Joseph Cook of the Small Mammal Inventory for an unknown genetic study. It would be advisable to gain access to this study on the specimens collected in the National Parks.

Hampering work along the Alaska-Canada border, a considerable lack of communication exists between Canadian as US amphibian researchers. Any further research in the border parks of GLBA, KLGO, WRST, and YUCH should compare results with the appropriate Canadian scientists.

The upcoming Conference on Alaska's Amphibians will be an invaluable opportunity to share the information gained through this project, and to learn about the results from agencies and researchers across North America. The primary goal of this conference will be to set forth a statewide conservation strategy for all of Alaska's amphibians, and is set for March 30 – April 1, 2004 in Juneau. More information, including agenda and, eventually, proceedings, can be found on the conference web site at: *http://www.stikine.org/akherps2004*

Finally, as a note for future researchers, the Alaska Department of Fish & Game lists all amphibian species as legally protected from taking. No one may take, transport or hold an amphibian collected in Alaska without a permit. Raising collected tadpoles or eggs without a permit is against the law, and so is releasing animals from captivity. Finally, no one is to release an exotic amphibian into the wild.

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| | | | |
|---|---|---|---|
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A very useful reference was the listserver at *akherps@stikine.org* developed by Kim Hastings of the US Fish and Wildlife Service, for identifications, range determinations, and protocol questions. Brian Slough of the Canadian Amphibian and Reptile Conservation Network helped with the identification of our first spotted frog. Jennifer McGrath provided illustrations and early research help for the identification flashcards and website, and thanks to Kathy Lepley of the Alaska Natural History Association for her professional design and printing help with the flashcards. Finally, my infinite appreciation to my wife, Monique, for her improvements to this paper, support to go for it, and patience with me babbling on about the newest find or latest wrinkle.

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## *Appendices*

*Appendix 1. Field Datasheet and Instructions*

**National Park Service**
**Alaska Region Inventory & Monitoring Program**
***Amphibian Field Form***


**Please provide as much information as possible, even if you are unsure of the species.**

**Date of observation** _____/_____/ _____ Time _____:_____ am pm
month day year

**Observer** First Name _____ MI_____ Last_____

Address _____

City _____ State _____ Zip _____ Country_____

E-mail Address _____

**Affiliation** (please circle)

NPS Employee Contractor Volunteer

Park/Office/Organization: _____

**Description of Animal(s)** Number of individuals observed _____

Common Name_____

Genus/Species _____

Skin Color _____ Skin Texture _____

Body Length (cm) _____ Pupil Shape _____

Other description:_____

**Growth Form (circle)**

Eggs Tadpole Subadult Adult

**Other (describe)** _____

**Deformities Present? (circle)** **Yes** **No**

If yes, please list them here:_____

Description of any observed behavior: _____

Have you identified this species before? (circle) ***Yes*** ***No***

Did you photograph this individual? (circle) ***Yes*** ***No***

Did you collect this individual for curation? (circle) ***Yes*** ***No***

Collection Information/ Location/ Number: _____

Weather/ Habitat

Temperature (deg C): _____ Cloud cover % _____

Recent Precipitation? (circle) ***Yes*** ***No*** Raining/ Snowing? ***Yes*** ***No***

**Habitat type (circle)**

***freshwater pond / lake*** ***stream*** ***river*** ***wetland/bog***

***salt water/ estuarine*** ***other*** (please describe) _____

Additional Habitat Information: _____

Inventory & Monitoring Site Name: _____

Site Name: _____

Water-body Name (if different):_____

GPS Location

| | | | |
|---|---|---|---|
| GPS Unit Type | | Longit e | |
| Datum | | Latitu | |
| EstHorizlError | | Elev. ( | |
| Accuracy Comme | | Aspect | |
| | | Slope | |

**Remarks** _____

_____

**Yay, you're almost done! Please send this form and any related documents, photos, or maps to the address on the bottom of the page. Thank you for contributing your time and skills to this project!**

## FIELD FORM GUIDELINES

**Please fill out all spaces on the form if applicable.** This will ensure that your observations are recorded. If you have any questions or comments, please send them to the address or fax number on the bottom of the page. Photographs of observed species would be greatly appreciated and can be returned if requested.

This field data form is meant to accompany the Final NPS **Amphibians of Alaska Flashcards** developed by the Alaska Region Inventory and Monitoring Program. This project was funded by the Southeast Alaska Inventory and Monitoring Network, **Lewis Sharman** Network Lead, Glacier Bay National Park and Preserve. Thank you to **Kirk Lohman,** NPS Regional Science Advisor and **Chad Soiseth**, Aquatic Biologist, Glacier Bay National Park and Preserve for review and comments, as well as the numerous photographers who graciously allowed the use of their images for the flashcards.

Data Collection Instructions:

**Description:** Describe the animal as accurately as you can so we can identify it from your description if necessary. Characteristics to note include size/length, shape, color, pattern (e.g., striped, banded, blotched, or unicolor), skin texture (e.g., smooth, shiny, rough, scaled, etc.), pupil shape (round or elliptical), and presence or absence of limbs and tail. This helps to distinguish life stages. See the references below for more information on identifying characteristics.

**Behavior:** Behavioral descriptions are useful in identifying animals and are inherently interesting. For example, was the animal moving or still? Did it crawl or hop? Was it fast or slow? Was it trying to escape from you, or was it hunting or feeding? Did it vocalize? What did it sound like?

**Location:** Accurate locality information can greatly enhance the value of your observation. Please use a GPS unit for locations if possible, and note datum, unit name, etc… Please include the exact coordinates (latitude and longitude in NAD27 is preferred). Otherwise, try to describe the site so that someone else could relocate it from your directions. For example, in a small pond, 4.5 miles N and 3.3 miles east of a known landmark (lake, trail, etc.). Please include a map if needed.

**Habitat:** Describe the major cover type (forested [needleleaf, broadleaf, or mixed], non-forested [alpine, grassland, shrubland, or barren, etc.], riparian and wetland [forested or scrub, scrub riparian, marsh, estuary, pond/lake, etc.], or developed land [i.e. urban]). Also describe the immediate area around the animal (burrow, rotten log, talus slope, stream band, etc.).

**Weather:** Please include ambient air temperature in C, percent cloud cover, and recent precipitation.

**Remarks:** Please include any other information you consider relevant.

Useful Sources

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*Appendix 2. Field Flashcard Example*

National Park Service

Alaska Amphibian Field Flashcard

## SPOTTED FROG

*(Rana pretosia)*



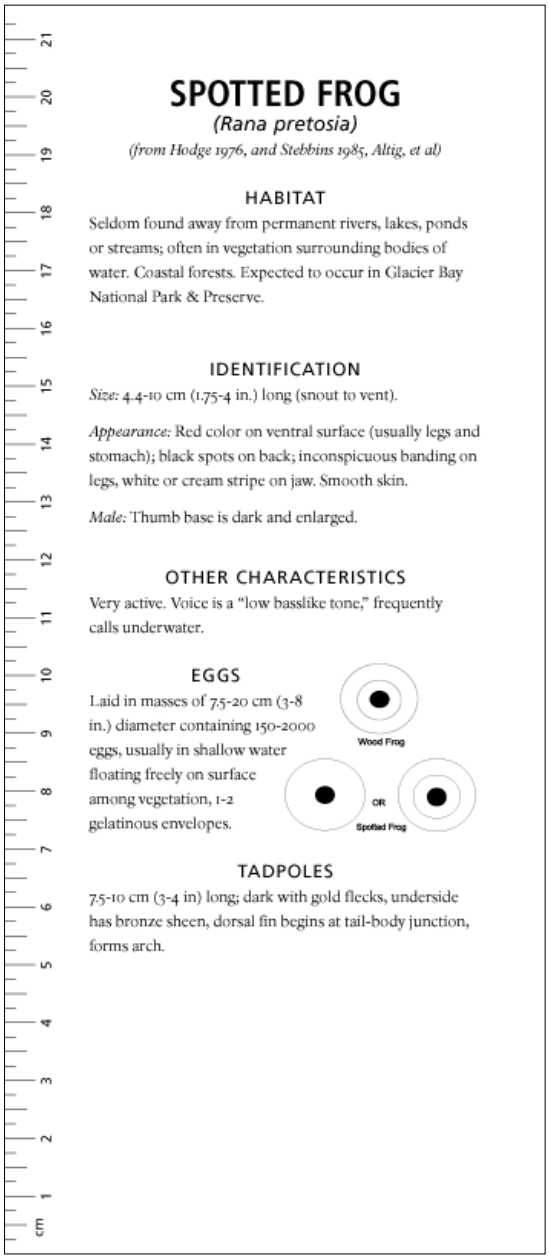
Adult spotted frog. 3.1-8.1 cm. Has red color on ventral surface and black spots on back with a white or cream jaw stripe. Smooth skin.



Ventral surface is white or cream. Thumb base is dark and enlarged in male.

Spotted frog egg clusters laid among aquatic vegetation. Usually free-floating.

*Alaska Amphibian Inventory Project*
*National Park Service, Inventory and Monitoring Program*
*Funded by the Southeast Alaska Network, Lewis Sharman, Network Lead*



## SPOTTED FROG

*(Rana pretosia)*

*(from Hodge 1976, and Stebbins 1985, Altig, et al)*

### HABITAT

Seldom found away from permanent rivers, lakes, ponds or streams; often in vegetation surrounding bodies of water. Coastal forests. Expected to occur in Glacier Bay National Park & Preserve.

### IDENTIFICATION

*Size:* 4.4-10 cm (1.75-4 in.) long (snout to vent).

*Appearance:* Red color on ventral surface (usually legs and stomach); black spots on back; inconspicuous banding on legs, white or cream stripe on jaw. Smooth skin.

*Male:* Thumb base is dark and enlarged.

### OTHER CHARACTERISTICS

Very active. Voice is a "low basslike tone," frequently calls underwater.

### EGGS

Laid in masses of 7.5-20 cm (3-8 in.) diameter containing 150-2000 eggs, usually in shallow water floating freely on surface among vegetation, 1-2 gelatinous envelopes.



### TADPOLES

7.5-10 cm (3-4 in) long; dark with gold flecks, underside has bronze sheen, dorsal fin begins at tail-body junction, forms arch.

*Appendix 3. Baseline NPSpecies Data Report*
(generated 10/02/2002)

| Standard Scientific Name | Standard Common Name | Park | Park Status | Status Details | Abundance | Abundance Details | Residency | Res. Details | Nativity | Data Source | Comments | Refs # | Vouch # | Obs # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rana sylvatica | Wood frog | DENA | Present in Park | No data | No data | No data | No data | No data | No data | DENA Wildlife Observation Cards | | 0 | 0 | 4 |
| Rana sylvatica | Wood frog | GAAR | Probably Present | No data | No data | No data | No data | No data | No data | Hodge, Robert 1976 | | 1 | 0 | 0 |
| Ambystoma gracile | Northwestern salamander | GLBA | Probably Present | No data | No data | No data | No data | accidental | No data | Hodge, R. P. Date unk. | | 1 | 0 | 0 |
| Bufo boreas | western toad | GLBA | Present in Park | No data | No data | No data | No data | No data | No data | Hodge, Robert 1976 | | 4 | 0 | 0 |
| Rana sylvatica | Wood frog | GLBA | Probably Present | No data | No data | No data | No data | No data | No data | Hodge, Robert 1976 | | 2 | 0 | 0 |
| Taricha granulosa | rough-skinned newt | GLBA | Probably Present | No data | No data | No data | No data | probably accidental | No data | Hodge, Robert 1976 | Streveler, pers comm. | 2 | 0 | 0 |
| Rana sylvatica | Wood frog | KEFJ | Probably Present | No data | No data | No data | No data | No data | No data | Hodge, Robert 1976 | | 1 | 0 | 0 |
| Bufo boreas | western toad | KLGO | Probably Present | No data | No data | No data | No data | No data | No data | Hodge, Robert 1976 | | 2 | 0 | 0 |
| Rana pretiosa | Spotted frog | KLGO | Probably Present | No data | No data | No data | No data | No data | No data | Gordon, R. J. Date unk. | Streveler, pers comm. | 2 | 0 | 0 |
| Rana sylvatica | Wood frog | KLGO | Probably Present | No data | No data | No data | No data | No data | No data | Hodge, Robert 1976 | | 3 | 0 | 0 |
| Rana sylvatica | Wood frog | KOVA | Present in Park | No data | No data | No data | No data | No data | No data | Melchior, H.R. 1976 | | 1 | 0 | 1 |
| Rana sylvatica | Wood frog | LACL | Present in Park | Hodge, Robert 1976 | No data | No data | No data | No data | No data | Hodge, Robert 1976 | | 1 | 0 | 2 |
| Rana sylvatica | Wood frog | NOAT | Probably Present | No data | No data | No data | No data | No data | No data | Hodge, Robert 1976 | | 1 | 0 | 0 |
| Bufo boreas | western toad | WRST | Present in Park | No data | No data | No data | No data | No data | No data | Hodge, Robert 1976 | | 3 | 1 | 1 |
| Rana sylvatica | Wood frog | WRST | Present in Park | No data | No data | No data | No data | No data | No data | Hodge, Robert 1976 | | 4 | 0 | 2 |
| Bufo boreas | western toad | YUCH | Probably Present | No data | No data | No data | No data | No data | No data | Hodge, Robert 1976 | | 2 | 0 | 0 |
| Rana sylvatica | Wood frog | YUCH | Probably Present | No data | No data | No data | No data | No data | No data | Hodge, Robert 1976 | | 2 | 0 | 0 |

*Appendix 4. NPS Alaska Amphibian Observation Database, 2001-2003*

| ID | Observe Date | Park Code | Species | Count | Life Stage | Habitat | Habitat Description | Site Name | Water Body | Latitude | Longitude | Datum | Error (m) | Accuracy Description | Elev (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 77 | 07/01/01 | GAAR | Wood frog | 1 | Adult | Wetland/bog | Slough beside the Alatna River near Takahula Lake. The frog was on wet sandy ground where Equisetum was growing. | Arrigetch Peaks | Alatna R. near Takahula Lake | 67.377530 | -153.663050 | WGS84 | 1000 | Estimated from Map 1:63,360 USGS Quad Map. Exact location unknown. | 300 |
| 6 | 07/10/01 | GAAR | Wood frog | 2 | Adult | Other | saw edge of walker lake, 10 m from water - spirea & blueberry plants | | Walker lake | 67.063860 | -154.321120 | NAD27 | 3 | DMS to third decimal place on second | 220 |
| 41 | 06/01/03 | GAAR | Wood frog | 5 | Adult | Wetland/bog | | | Walker Lake | 67.046260 | -154.208540 | NAD27 | 8 | | 243 |
| 42 | 06/03/03 | GAAR | Wood frog | 5 | Adult | Wetland/bog | | | Nutuvukti Lake | 67.012840 | -154.730500 | NAD27 | 8 | | 213 |
| 4 | 06/23/01 | GLBA | Western toad | 2 | Subadult | Salt water / estuarine | Found in terrestrial herb. Meadows zone along coast, adjacent to upper intertidal | Just north of Sebree Cove | Sebree Cove | 58.781110 | -136.154870 | WGS84 | 60 | Estimated from Map 1:63,360 USGS Quad Map | 3 |
| 5 | 06/24/01 | GLBA | Western toad | 2 | Subadult | Salt water / estuarine | Terrestrial herbaceous meadow above & adjacent to upper intertidal | Carolyn Point | Sebree Cove | 58.782000 | -136.168000 | WGS84 | 900 | DMS to nearest minute | 5 |
| 35 | 06/29/01 | GLBA | Western toad | 1 | Subadult | Salt water / estuarine | Observed on Bartlett River Trail near the north end of the lagoon | | Bartlett Cove Lagoon | 58.461400 | -135.860200 | WGS84 | 60 | Estimated from Map 1:63,360 USGS Quad Map | 5 |
| 17 | 07/16/01 | GLBA | Western toad | 1 | Adult | River | Equisetum variegatum and forbs, GLBALCID 50 (Landcover plot map) | Dundas River floodplain, vegetated side channel | Dundas River | 58.401750 | -136.322150 | WGS84 | 7 | | -6 |
| 7 | 07/20/01 | GLBA | Western toad | 1 | Other | Stream | rocky stream shore, little veg. close to bank, some sm. pools w/algae | Stonefly Creek | Wachusett Inlet | 58.967730 | -136.352160 | WGS84 | 24 | | 120 |
| 18 | 07/21/01 | GLBA | Western toad | 1 | Adult | Wetland/bog | GLBALCID 10075 (Landcover plot map) | GLBALCID 10075 | Dundas River | 58.433100 | -136.379650 | WGS84 | 10 | PLGR died, no cross-reference | 500 |
| 8 | 07/22/01 | GLBA | Western toad | 1 | Adult | Stream | 20 m from stream. Mossy clearing among alder above falls | Stonefly Creek | Wachusett Inlet | 58.968183 | -135.657817 | NAD27 | 16 | | |
| 9 | 07/29/01 | GLBA | Western toad | 1 | Adult | Stream | rocky outcrop 2 m to veg. and 4 to stream | Stonefly Creek | Wachusett Inlet | 58.968050 | -135.653183 | NAD27 | 14 | | |
| 10 | 07/30/01 | GLBA | Western toad | 1 | Subadult | Stream | 1m from veg, 1 m from stream | Stonefly Creek | Wachusett Inlet | 58.968050 | -135.653183 | NAD27 | 14 | | |
| 11 | 07/30/01 | GLBA | Western toad | 1 | Subadult | Stream | 2m from stream, 1 m from veg | Stonefly Creek | Wachusett Inlet | 58.968050 | -135.653183 | NAD27 | 14 | | |
| 12 | 07/30/01 | GLBA | Western toad | 1 | Adult | Stream | 1m from water, 3-4m from steep banking | Stonefly Creek | Wachusett Inlet | 58.968183 | -135.657817 | NAD27 | 16 | | |
| 3 | 08/01/01 | GLBA | Western toad | 1 | Adult | Other | Along coastline, in woody vegetation - dry. Adjacent to marine intertidal | Adams Inlet Island | Adams Inlet | 58.887410 | -135.863630 | WGS84 | 60 | Estimated from Map 1:63,360 USGS Quad Map | 10 |

| ID | Observe Date | Park Code | Species | Count | Life Stage | Habitat | Habitat Description | Site Name | Water Body | Latitude | Longitude | Datum | Error (m) | Accuracy Description | Elev (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08/03/01 | GLBA | Western toad | 1 | Adult | Wetland/bog | In wet meadow near lake | Vivid Lake - south side | Tidal Inlet | 58.836160 | -136.457940 | WGS84 | | Position estimated from comments | 20 |
| 13 | 08/09/01 | GLBA | Western toad | 1 | Subadult | Freshwater pond lake | 3m from veg. Shore rocky, not vegetated. | Stonefly Creek | Wachusett Inlet | 58.968183 | -135.657817 | NAD27 | 16 | | |
| 14 | 08/10/01 | GLBA | Western toad | 1 | Adult | Freshwater pond lake | On gravel 10m from pond. Pond surrounded by veg. Approx. 15-20m to stream. | Stonefly Creek | Wachusett Inlet | 58.968183 | -135.657817 | NAD27 | 16 | | |
| 2 | 08/12/01 | GLBA | Western toad | 2 | Subadult | Other | Found along river trail in grass/herbs | Bartlett River Trail | Bartlett River | 58.482670 | -135.842950 | WGS84 | 60 | Estimated from Map 1:63,360 USGS Quad Map | 3 |
| 15 | 08/12/01 | GLBA | Western toad | 1 | Subadult | Stream | 2m from stream, 3m from veg. | Stonefly Creek | Wachusett Inlet | 58.968183 | -135.657817 | NAD27 | 16 | | |
| 30 | 06/05/02 | GLBA | Western toad | 8 | Tadpole | Other | borrow pond | Wilson Road/ Rink Creek corner borrow pond | | 58.433000 | -135.733000 | NAD27 | 60 | Estimated from Map 1:63,360 USGS Quad Map | 10 |
| 36 | 06/15/02 | GLBA | Western toad | 1 | Adult | Stream | High grass along the Bartlett River | | Bartlett River | 58.485400 | -135.844300 | WGS84 | 60 | Estimated from Map 1:63,360 USGS Quad Map | 10 |
| 32 | 06/17/02 | GLBA | Western toad | 900 | Tadpole | Other | man-made borrow pond (gravel pit) | S. Airport Borrow Pond | | 58.433300 | -135.683300 | NAD27 Alaska | 60 | Estimated from Map 1:63,360 USGS Quad Map | 10 |
| 31 | 07/04/02 | GLBA | Western toad | 200 | Tadpole | Other | roadside ditch | Rink Creek area | | 58.433000 | -135.650000 | NAD27 Alaska | 60 | Estimated from Map 1:63,360 USGS Quad Map | 10 |
| 20 | 07/22/02 | GLBA | Western toad | 125 | Tadpole | Freshwater pond lake | Recently deglaciated area (last 40 years) with a system of ponds connected by small streams | | Muir Inlet | 59.068020 | -136.297170 | NAD27 | 60 | Estimated from Map 1:63,360 USGS Quad Map | |
| 23 | 07/31/02 | GLBA | Western toad | 1 | Subadult | Wetland/bog | Just above the intertidal beach. Moss and equisetum variegatum. | Mainland in Beardslee Islands, N of Link Island | Glacier Bay | 58.573360 | -135.934330 | WGS84 | | | 3 |
| 16 | 08/12/02 | GLBA | Western toad | 1 | Subadult | Stream | stream edge and swimming | Stonefly Creek | Wachusett Inlet | 58.968183 | -135.657817 | NAD27 | 16 | | |
| 29 | 10/03/02 | GLBA | Western toad | 1 | Adult | Other | Road between GLBA Visitor Info. Station & fuel farm. Paved road 100 ft from shoreline (marine) | | Bartlett Cove | 58.454000 | -135.884000 | WGS84 | 200 | Estimated from comments | 5 |
| 70 | 05/07/03 | GLBA | Western toad | 1 | Adult | Forested Area | Forested roadway (spruce, alder, cottonwood) 50m N of Rink Creek Bridge | Rink Creek Road | | 58.441260 | -135.651710 | NAD27 | 60 | Estimated from Map 1:63,360 USGS Map | 30 |
| 37 | 05/18/03 | GLBA | Western toad | 1 | Adult | River | | | Bartlett River | 58.405830 | -135.823330 | NAD27 | | Estimated from comments. | 1 |

| ID | Observe Date | Park Code | Species | Count | Life Stage | Habitat | Habitat Description | Site Name | Water Body | Latitude | Longitude | Datum | Error (m) | Accuracy Description | Elev (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 71 | 05/25/03 | GLBA | Western toad | 1 | Adult | Other | Borrow pit area near N end airport along Rink Creek Road (near freshwater pond) Manmade habitat, forested clearing (spruce) | North Airport Borrow Pit area | | 58.441260 | -135.735050 | NAD27 | 60 | Estimated from Map 1:63,360 USGS Quad Map | 30 |
| 72 | 06/03/03 | GLBA | Western toad | 40 | Tadpole | Freshwater pond lake | Man-made habitat | South Airport Borrow Pit | | 58.427370 | -135.685050 | NAD27 | 60 | Estimated from Map 1:63,360 USGS Quad Map | 30 |
| 40 | 06/14/03 | GLBA | Western toad | 1 | Adult | Salt water / estuarine | Water in bucket was stagnant. Bucket was in flotsam area at the top of the beach. Very large flotsam area (1kmx30m). | | Graves Harbor | 58.295830 | -136.691670 | WGS84 | | Unknown accuracy | 0 |
| 39 | 07/02/03 | GLBA | Western toad | 30 | Tadpole | Freshwater pond lake | Pond was in a glacial moraine | Hugh Miller Glacier Moraine | | 58.744000 | -136.647000 | WGS84 | 60 | Estimated from Map 1:63,360 USGS Quad Map | 270 |
| 38 | 07/16/03 | GLBA | Western toad | 2 | Adult | Freshwater pond lake | Tiny pond at the end of a stream. Likely intertidal at very high tides and during storms. Just above cobble beach near rock knoll. | Mary's Beach | | 58.894640 | -136.914830 | WGS84 | 160 | Waypoint taken 100m east of location. | 0 |
| 48 | 07/30/03 | GLBA | Western toad | 1 | Adult | Salt water / estuarine | Herbs just above tide on island | N Composite Island, tiny cove E side | Mouth of Queen Inlet | 58.897110 | -136.566630 | WGS84 | | | 1 |
| 49 | 08/01/03 | GLBA | Western toad | 1 | Subadult | Salt water / estuarine | grasses atop beach | North Young Island | | 58.495470 | -135.963920 | WGS84 | 60 | Estimated from Map 1:63,360 USGS Quad Map | 1 |
| 47 | 08/26/03 | GLBA | Western toad | 1 | Adult | Other | Asphalt area in forested area in front of lodge | Glacier Bay Park Lodge Parking Lot | | 58.453360 | -135.884570 | WGS84 | 60 | Estimated from Map 1:63,360 USGS Quad Map | 20 |
| 51 | 09/05/03 | GLBA | Western toad | 4 | Subadult | Stream | Along bank of stream feeding Bartlett river. Several observed where trail crosses stream. On both banks. | | Bartlett River | 58.500000 | -135.820000 | WGS84 | 2000 | Estimated from comments | 10 |
| 50 | 09/08/03 | GLBA | Western toad | 1 | Adult | Other | window well of exercise building beneath roof for bike storage. Forested area | | Bartlett Cove | | | WGS84 | | | |
| 73 | 10/09/03 | GLBA | Western toad | 1 | Adult | Stream | near stream - crossing road | | Bartlett Cove | 58.454500 | -135.880270 | WGS84 | 300 | estimated from comments | 3 |

| ID | Observe Date | Park Code | Species | Count | Life Stage | Habitat | Habitat Description | Site Name | Water Body | Latitude | Longitude | Datum | Error (m) | Accuracy Description | Elev (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | 07/16/00 | GLBA | North-western salamander | 1 | Adult | Stream | Under log in riparian needleleaf and alder area in stream on southeast arm @ 200m from shore. Not Murphy Cove. | Graves Harbor Stream | Graves Harbor | 58.274880 | -136.673130 | WGS84 | 60 | Estimated from Map 1:63,360 USGS Quad Map | 20 |
| 79 | 07/21/94 | GLBA | Wood Frog | 2 | Adult | Wetland/bog | Near the confluence of Ninety-eighter Cr. and Tatshenshini River | 15-20 mile upriver of the Park border in Canada | Tatshenshini River | 59.43292 | -137.50181 | WGS84 | | Estimated from Map 1:250,000 Map | |
| 22 | 07/06/02 | KATM | Wood frog | 2 | Adult | Wetland/bog | | 5-6 Miles NE of Swikshak Cabin | | 58.635990 | -153.597110 | NAD27 | 2600 | | 17 |
| 33 | 06/19/02 | KLGO | Western toad | 1 | Adult | Stream | see photos (Alnus litter, Trientalis, Epilobium, Galium) | Chilkoot Trail | | 59.771190 | -135.094205 | WGS84 | 30 | Waypoint not averaged. Elevation approximate. | 800 |
| 24 | 08/01/02 | KLGO | Western toad | 1 | Adult | Other | Alongside trail, almost to Finnegan's Point | Chilkoot Trail | | 59.571300 | -135.335270 | WGS84 | | Estimated from comments | 50 |
| 25 | 08/04/02 | KLGO | Western toad | 1 | Adult | | | Chilkoot Trail | | 59.772600 | -135.090700 | NAD27 | | Estimated from comments | 800 |
| 26 | 08/05/02 | KLGO | Western toad | 1 | Adult | Stream | Near slow, low heavily vegetated seepage | Laughton Glacier Cabin Trail~0.25mile | East Fork Skagway River (nearest) | 59.553010 | -135.117510 | NAD27 Alaska | 13 | | 604 |
| 27 | 08/05/02 | KLGO | Western toad | 1 | Adult | Wetland/bog | further away from seepage than first site (00026) | Laughton Glacier Cabin Trail~0.3mile | East Fork Skagway River (nearest) | 59.553010 | -135.116970 | NAD27 Alaska | 13 | | 604 |
| 28 | 08/11/02 | KLGO | Western toad | 1 | Adult | Other | Dyea Town site. Near willow and hemlock, crossing trail | Dyea town site | | 59.491000 | -135.352000 | WGS84 | 1000 | Estimated from comments | 20 |
| 56 | 07/10/03 | KLGO | Western toad | 75 | Tadpole | Wetland/bog | small pond surrounded by grasses/sedges, Lathyrus, Iris | Dyea Flats | | 59.499821 | -135.360993 | NAD27 Yukon | | | 1 |
| 59 | 07/13/03 | KLGO | Western toad | 20 | Tadpole | Wetland/bog | Surrounded by grass/sedge, lathyrus, iris. Small pond w/in wetland / slough area | | | 59.499870 | -135.361050 | NAD27 Alaska | 7 | good satellite configuration | 1 |
| 61 | 07/13/03 | KLGO | Western toad | 1 | Adult | Other | boreal forest | | Lindeman/ Deep Lakes | 59.771340 | -135.097930 | WGS84 | | Coordinates estimated using description & ArcView GIS | |
| 62 | 07/13/03 | KLGO | Western toad | 1 | Adult | Other | Boreal forest | | Lindeman Lake watershed | 59.760000 | -135.080000 | WGS84 | 3000 | Estimated from comments | 900 |
| 55 | 07/14/03 | KLGO | Western toad | 200 | Tadpole | Wetland/bog | small pond surrounded by grasses/sedges, Lathyrus, Iris | Dyea Flats | | 59.499821 | -135.360993 | NAD27 Yukon | | Good satellite config. | 1 |

| ID | Observe Date | Park Code | Species | Count | Life Stage | Habitat | Habitat Description | Site Name | Water Body | Latitude | Longitude | Datum | Error (m) | Accuracy Description | Elev (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 57 | 07/30/03 | KLGO | Western toad | 1 | Tadpole | Wetland/bog | slough-like wetland, 10 feet wide w/channel 3 feet wide running through. Plants primarily grasses and sedges. | Dyea Flats | | 59.500180 | -135.358200 | NAD27 Alaska | 7 | | 1 |
| 58 | 07/30/03 | KLGO | Western toad | 1 | Tadpole | Wetland/bog | Tall grass & Sedge, wetland is channel on slough | Dyea Flats | | 59.499970 | -135.360090 | NAD27 Alaska | 8 | | 1 |
| 63 | 08/01/03 | KLGO | Western toad | 20 | Tadpole | Stream | Nelson Creek just upstream of the vehicle bridge | | Nelson Creek | 59.498120 | -135.358560 | NAD27 | 60 | Estimated from Map 1:63,360 USGS Quad Map | 6 |
| 54 | 08/05/03 | KLGO | Western toad | 2 | Tadpole | | | Dyea Flats | | 59.500180 | -135.358200 | NAD27 Alaska | 100 | Estimated from corresponden ce with Meg Hahr | |
| 53 | 08/07/03 | KLGO | Western toad | 1 | Adult | Other | trail near creek | | | 59.560000 | -135.340000 | WGS84 | 500 | Estimated from Comments | 50 |
| 52 | 08/18/03 | KLGO | Western toad | 1 | Adult | Freshwater pond lake | In the water 1 1/2' deep, beside the bridge | | | 58.500000 | -135.820000 | WGS84 | 2000 | Estimated from comments | |
| 66 | 08/23/03 | KLGO | Western toad | 1 | Adult | Other | road, some grass nearby. Corner of 1st and Main | | | 59.455100 | -135.320590 | NAD27 Alaska | | Good satellite config. | 14 |
| 64 | 09/04/03 | KLGO | Western toad | 1 | Subadult | Stream | Frog observed next to stream - Nelson Creek | | Nelson Creek | 59.497500 | -135.361400 | NAD27 Alaska | 60 | Estimated from Map 1:63,360 USGS Quad Map | |
| 68 | 09/07/03 | KLGO | Western toad | 1 | Adult | Wetland/bog | wetland/bog nearby. Willow/alder nearby. Found trapped between railroad tracks | | | | | | | | |
| 65 | 09/20/03 | KLGO | Western toad | 1 | Subadult | Other | He was crawling along the dirt. Road near boggy slough area & stream on Dyea Flats just south of the bridge. | | | 59.497680 | -135.358810 | NAD27 | 60 | Estimated from Map 1:63,360 USGS Quad Map | 6 |
| 69 | 09/29/03 | KLGO | Western toad | 1 | Subadult | Wetland/bog | | | Nelson Slough | 59.501040 | -135.356790 | NAD27 Alaska | 10 | Estimated from Map 1:25000 USGS Quad Map | 3 |
| 34 | 06/19/02 | KLGO | Columbia spotted frog | 1 | Adult | Stream | See photo | Chilkoot Trail | | 59.766900 | -135.119800 | WGS84 | 30 | Waypoint not averaged. Elevation approximate. | 966 |
| 60 | 07/30/03 | KLGO | Columbia spotted frog | 1 | Adult | Freshwater pond lake | Pond is located between the Chilkoot Trail and Deep Lake in Canada | | Deep Lake | 59.765450 | -135.120240 | WGS84 | 60 | Estimated using ArcView GIS from description | |
| 19 | 07/07/98 | KOVA | Wood frog | 5 | Adult | Other | tall grasses (0.5-1.0m) | Kallarichuk Field Station | Kobuk River | 67.092000 | -159.773000 | NAD27 | 60 | Estimated from Map 1:63,360 USGS Quad Map | |
| 21 | 08/06/02 | LACL | Wood frog | 1 | Adult | Freshwater pond lake | On north shore of Lake Clark next to Dice Bay | | Lake Clark | 60.235360 | -154.392070 | WGS84 | 60 | Estimated from Map 1:63,360 USGS Quad Map | 320 |

| ID | Observe Date | Park Code | Species | Count | Life Stage | Habitat | Habitat Description | Site Name | Water Body | Latitude | Longitude | Datum | Error (m) | Accuracy Description | Elev (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 74 | 07/12/03 | LACL | Wood frog | 2 | Adult | Other | freshwater slough, slow current | Hatchet Point | Head of Lake Clark | 60.394940 | -153.844960 | NAD27 | 100 | lat/long taken from adjacent trapline | 90 |
| 45 | 07/13/03 | LACL | Wood frog | 4 | Adult | Other | dry meadow (seasonally moist) Viereck III.A.2 Mesic graminoid herbaceous | | Head of Lake Clark | 60.396480 | -153.830130 | WGS84 | 3.8 | | |
| 44 | 07/26/03 | LACL | Wood frog | 3 | Adult | Freshwater pond lake | beaver pond bordered by willow scrub then birch spruce | | Two Lakes near outlet | 61.105150 | -153.863820 | WGS84 | 3.3 | | |
| 46 | 07/26/03 | LACL | Wood frog | 2 | Adult | Freshwater pond lake | Lake bordered by birch spruce forest | 0.75 km NNW Necong River | Two Lakes | 61.106630 | -153.854370 | WGS84 | 5.6 | | |
| 75 | 07/26/03 | LACL | Wood frog | 2 | Adult | Freshwater pond lake | seen among reeds along shore | | Two Lakes | 61.103090 | -153.866540 | NAD27 | 50 | lat/long taken from adjacent trapline | 350 |
| 76 | 07/26/03 | LACL | Wood frog | 1 | Adult | Freshwater pond lake | among reeds along sandy shore. Collected for the University of Alaska Museum. Since only one frog was collected at this locality, it should be easy to identify (at UAM) if necessary. | | Two Lakes | 61.106000 | -153.856650 | NAD27 | 50 | lat/long taken from adjacent trapline | 350 |
| 78 | 09/20/03 | SITK | Rough-skinned newt | 1 | Adult | Forested Area | Coastal forest, island. Found on wooded path near dense vegetation. | Rockwell Island Lighthouse | Sitka Sound | 57.038350 | -135.338090 | WGS84 | 100 | Estimated from comments on 1:63,360 USGS Quad Map | 5 |
| 67 | 07/05/03 | YUCH | Wood frog | 1 | Adult | Wetland/bog | wet meadow slough to pond. Drain into Yukon River. Carex utriculata sedge | YUCH Landcover 2003 plot 20-4, wpt 46 | | 65.351340 | -143.039860 | NAD27 | 20.8 | | |

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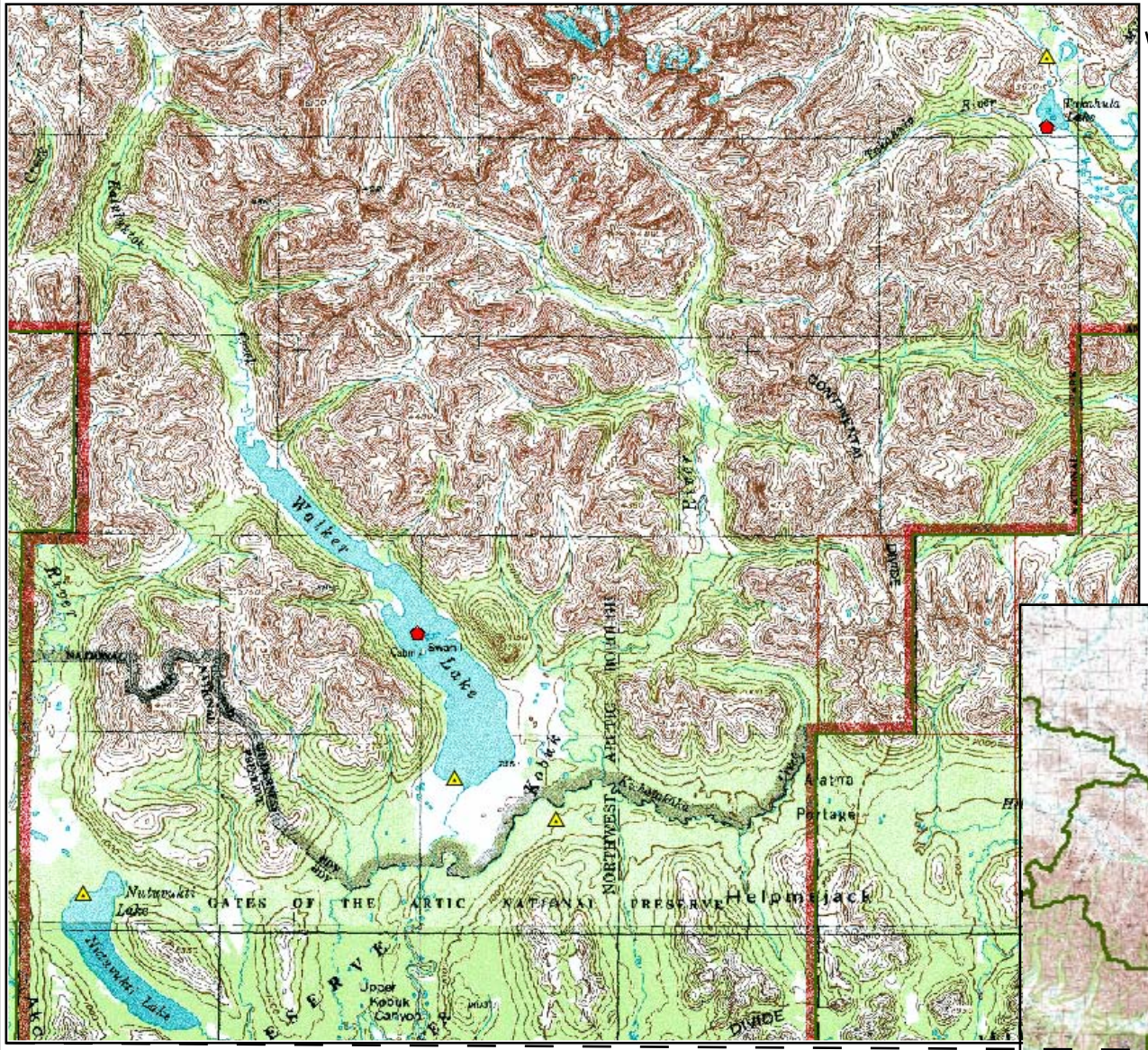
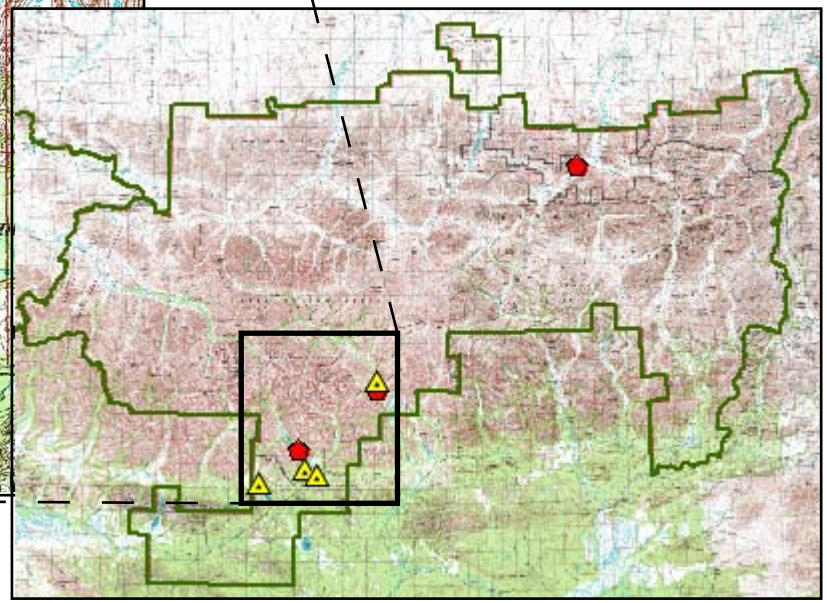
**Opportunistic Amphibian Inventory 2001-2003**

# Gates of the Arctic NP & Preserve




LEGEND
- Inventory Observation
  Wood Frog
- U. of Alaska Museum Specimen
  Wood Frog

Location Map

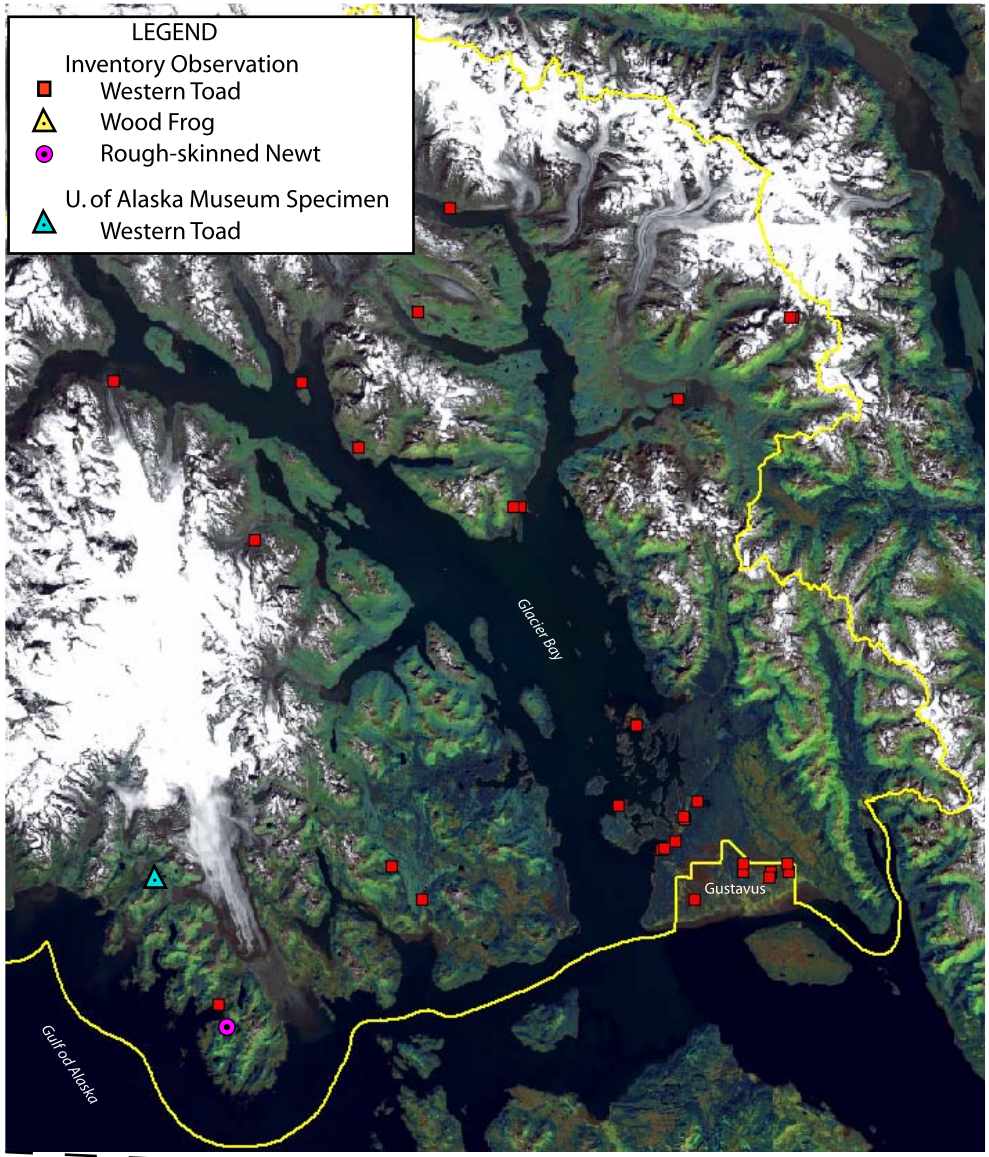


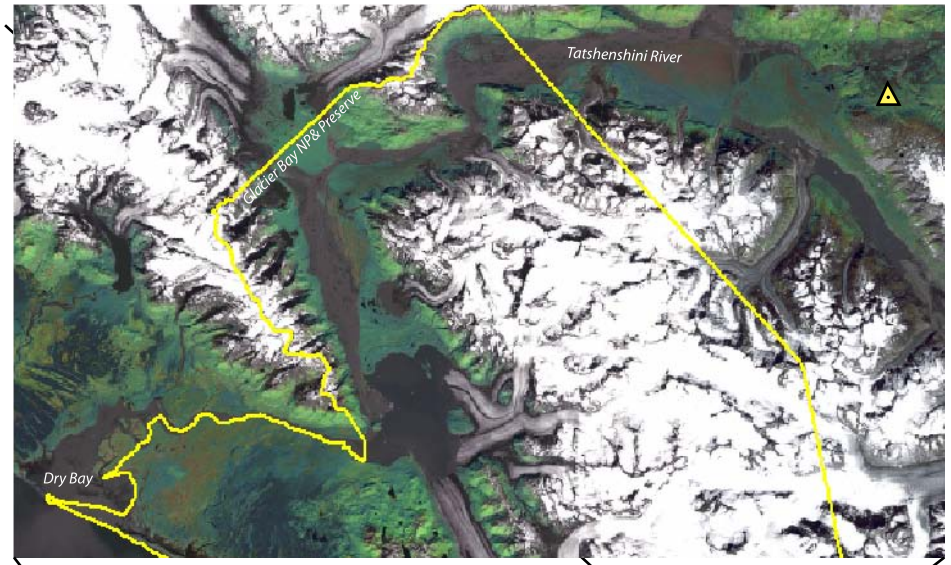
*An Opportunistic Amphibian Inventory in Alaska's National Parks, 2001-2003*

*Appendix 5. Location Maps by Park, Gates of the Arctic NP & Pres.*

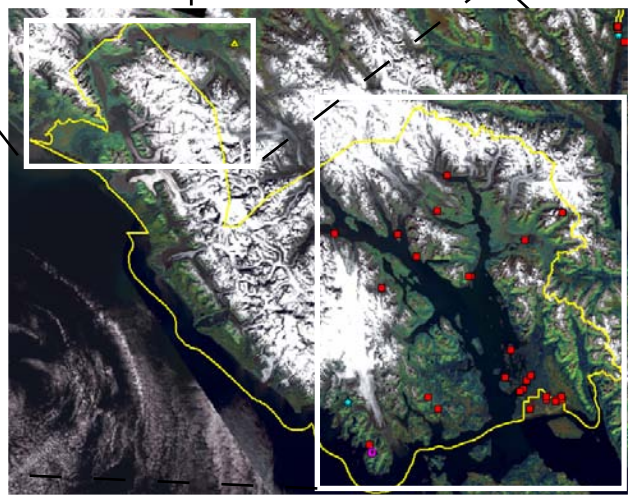
National Park Service
Alaska Region
Inventory & Monitoring Program
**Opportunistic Amphibian Inventory 2001-2003**

# Glacier Bay NP & Preserve




Location Map

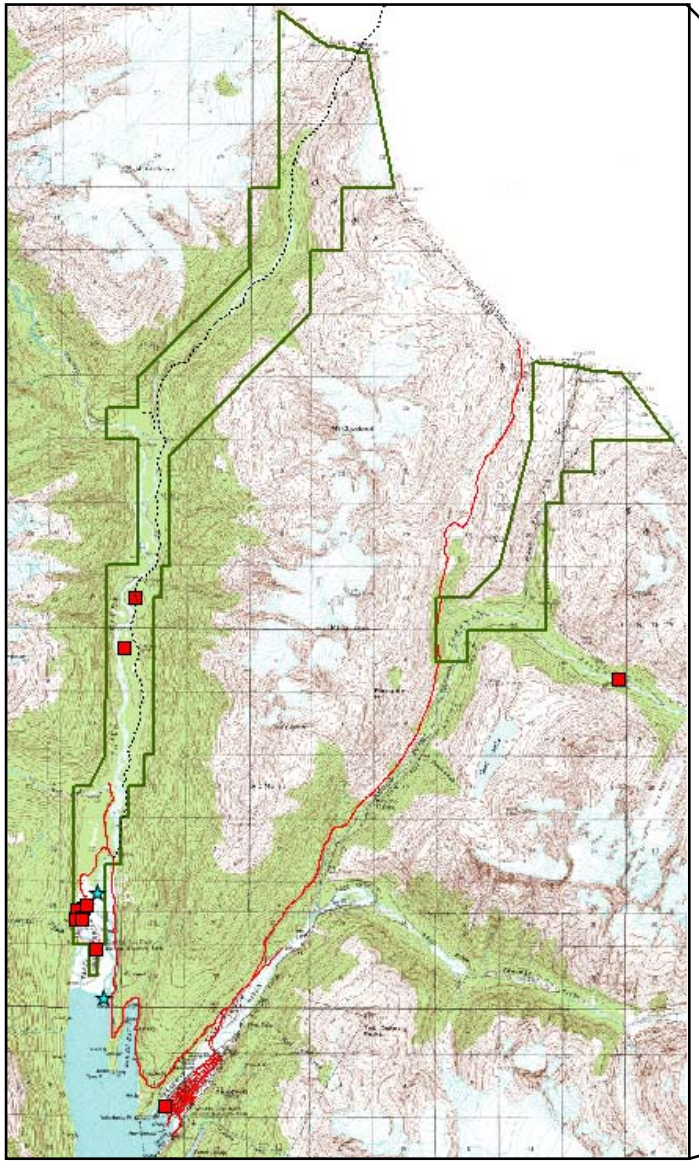


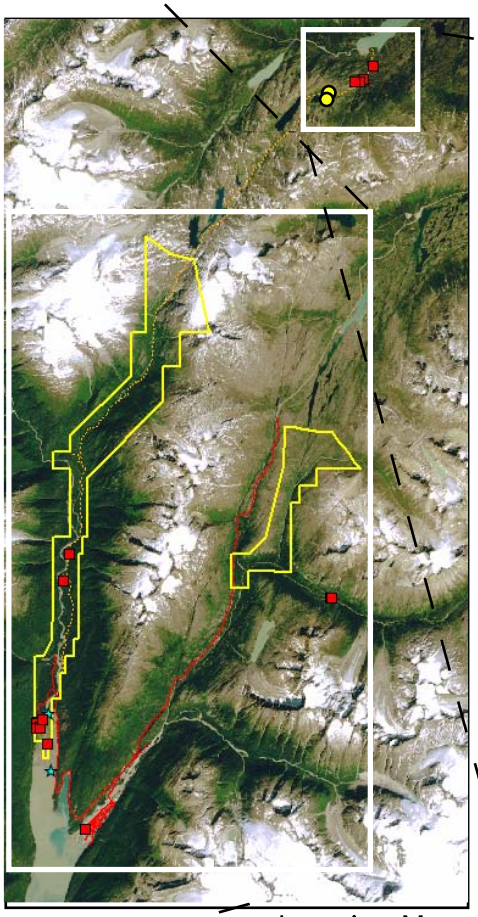
*An Opportunistic Amphibian Inventory in Alaska's National Parks, 2001-2003*

*Appendix 5. Location Maps by Park, Glacier Bay NP & Pres.*

National Park Service
Alaska Region
Inventory & Monitoring Program
**Opportunistic Amphibian Inventory 2001-2003**

# Klondike Goldrush NHP



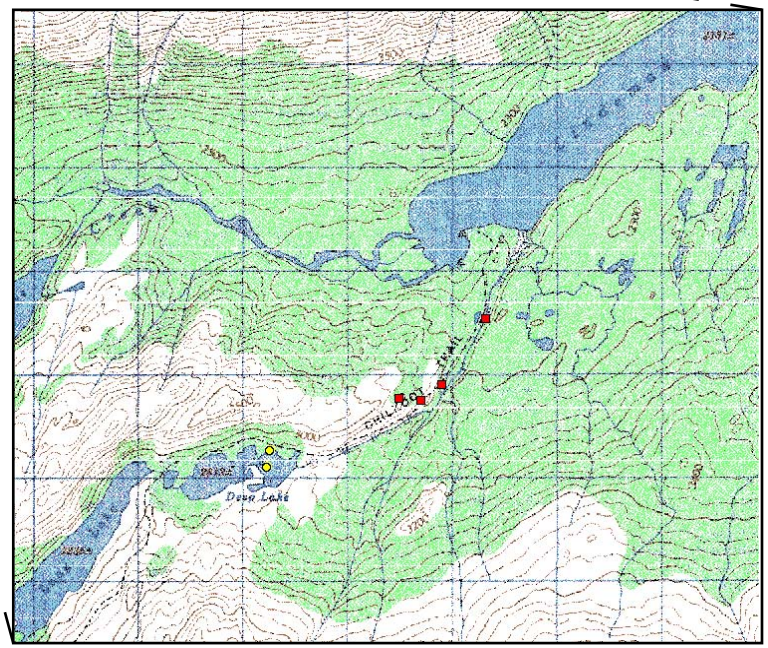


Location Map

LEGEND

Inventory Observation
- Western Toad
- Columbia Spotted Frog

U. of Alaska Museum Specimen
- Western Toad



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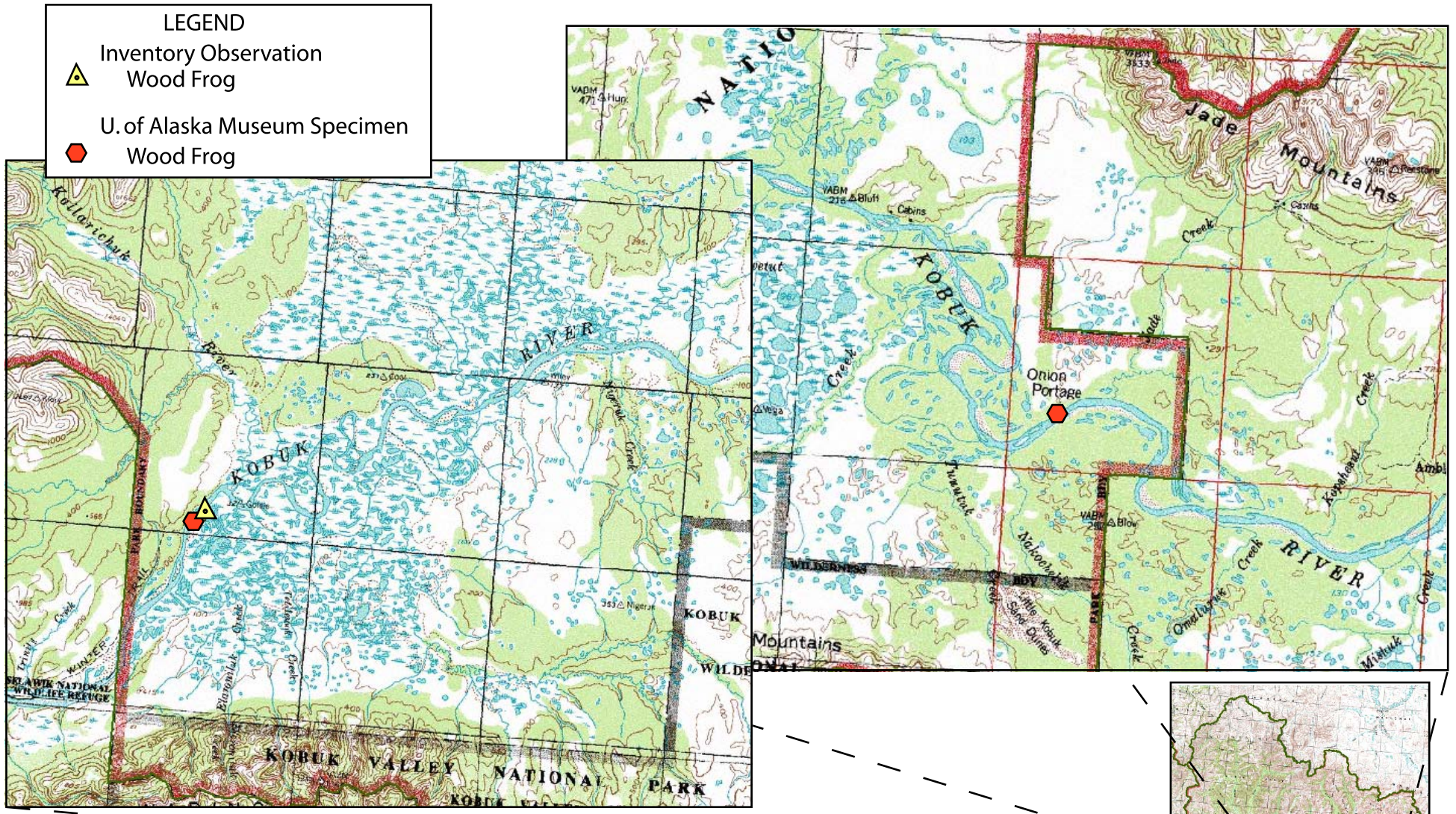
**Opportunistic Amphibian Inventory 2001-2003**

# Kobuk Valley NP

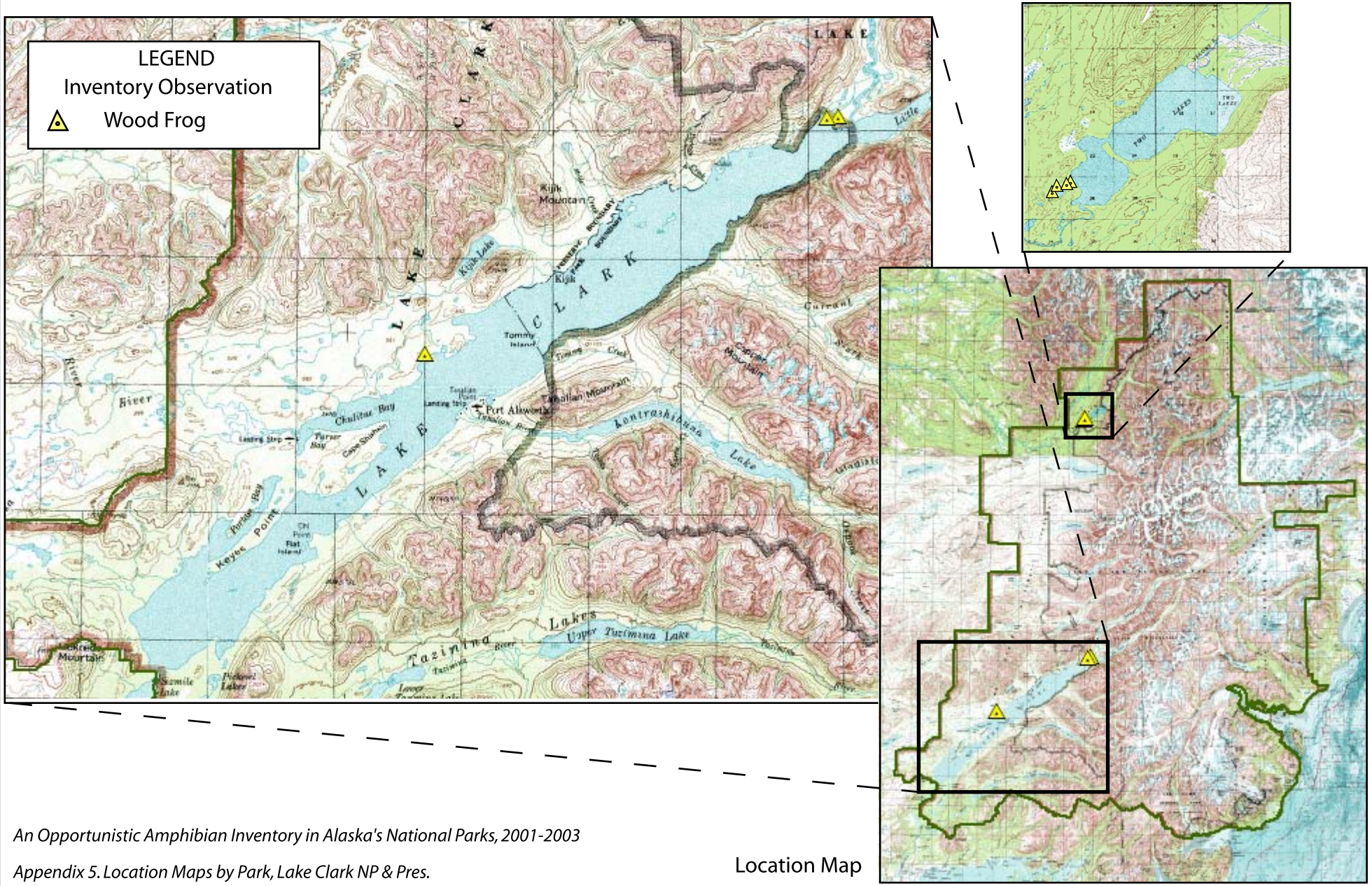



*An Opportunistic Amphibian Inventory in Alaska's National Parks, 2001-2003*

*Appendix 5. Location Maps by Park, Kobuk Valley NP*

National Park Service
Alaska Region
Inventory & Monitoring Program
**Opportunistic Amphibian Inventory 2001-2003**

# Lake Clark NP & Preserve




*An Opportunistic Amphibian Inventory in Alaska's National Parks, 2001-2003*

*Appendix 5. Location Maps by Park, Lake Clark NP & Pres.*

National Park Service
Alaska Region
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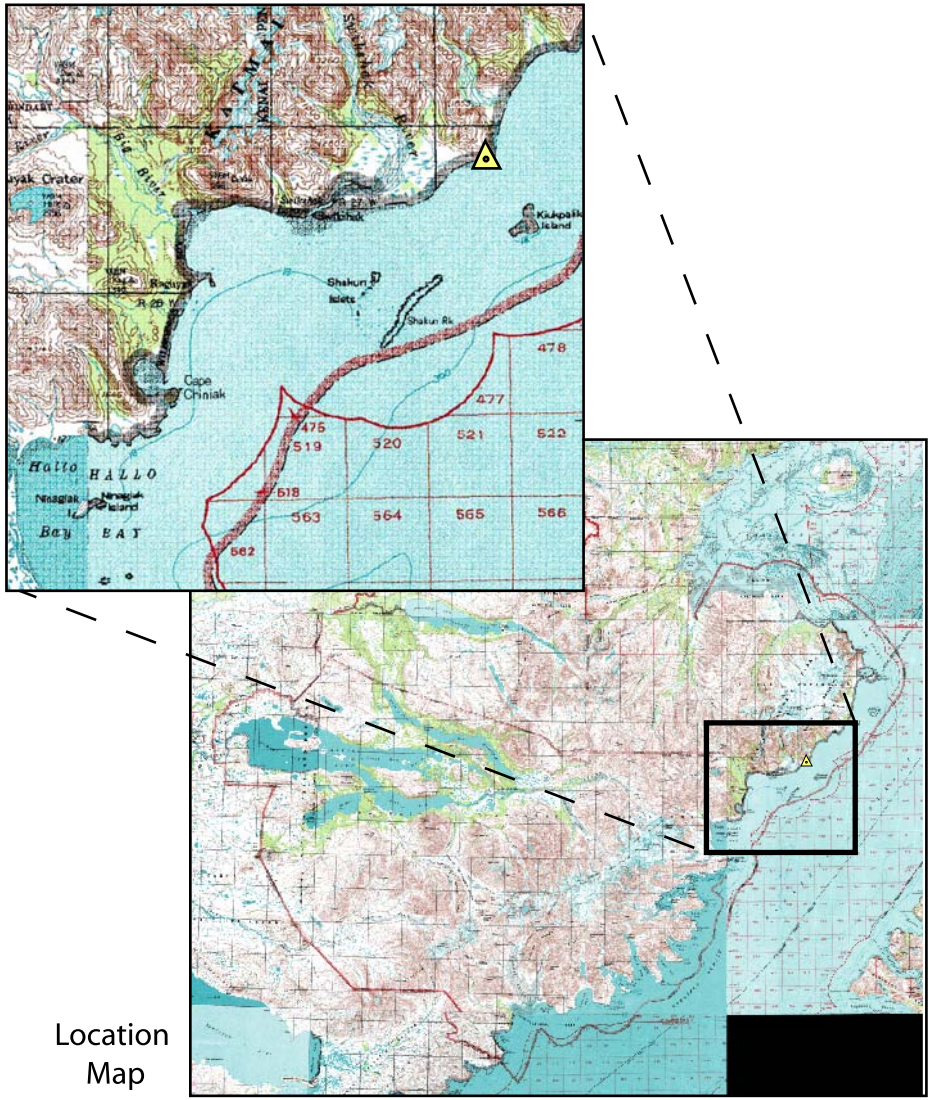
**Opportunistic Amphibian Inventory 2001-2003**

# Sitka NHP and Katmai NP & Preserve

## KATMAI COAST




Location Map

## SITKA SOUND

LEGEND
Inventory Observation
Wood Frog
Rough-skinned Newt

Location Map


*An Opportunistic Amphibian Inventory in Alaska's National Parks, 2001-2003*

*Appendix 5. Location Maps by Park, Sitka NHP and Katmai NP & Pres.*

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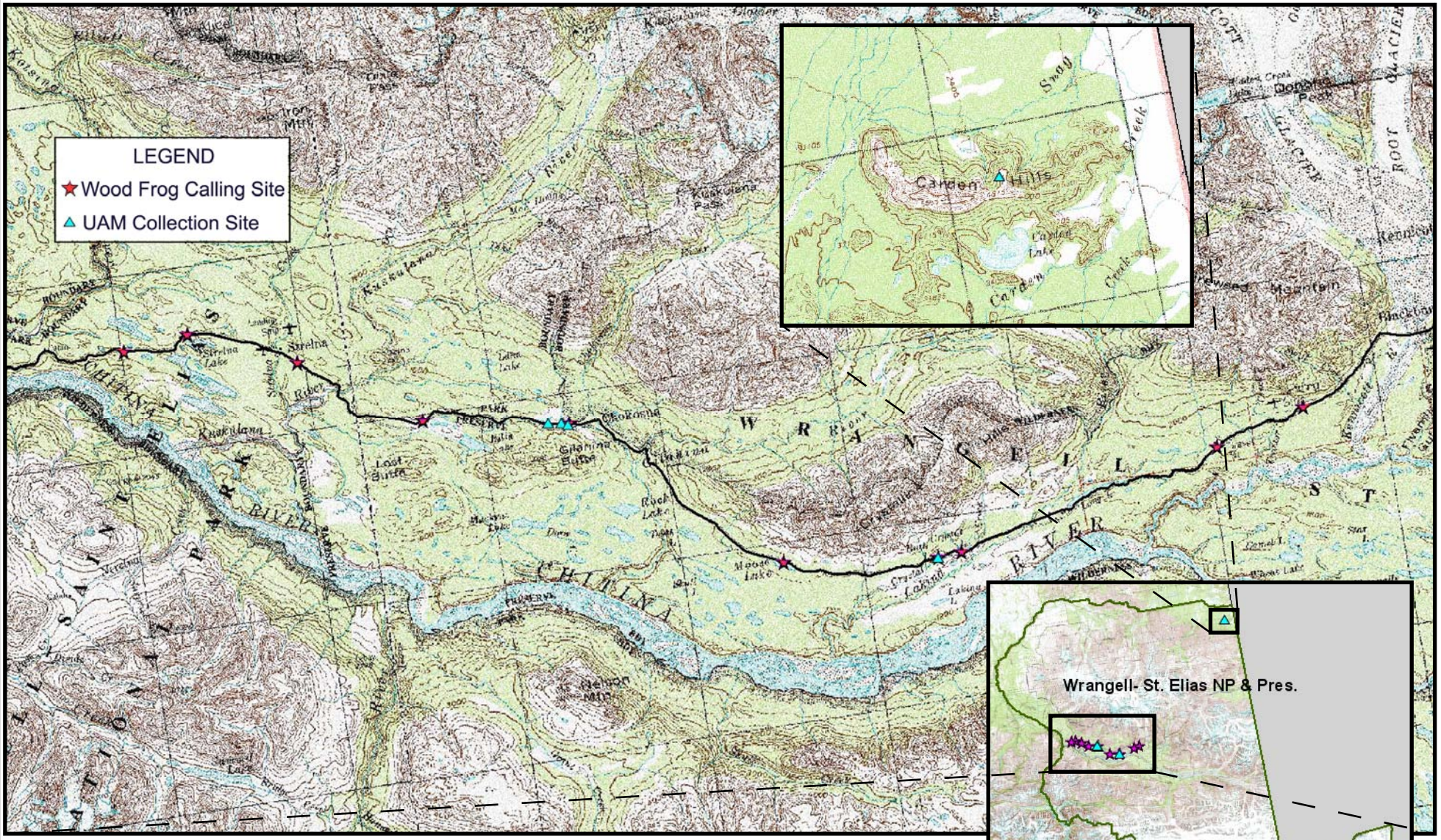
Inventory & Monitoring Program
**Opportunistic Amphibian Inventory 2001-2003**

# Wrangell - St. Elias National Park & Preserve



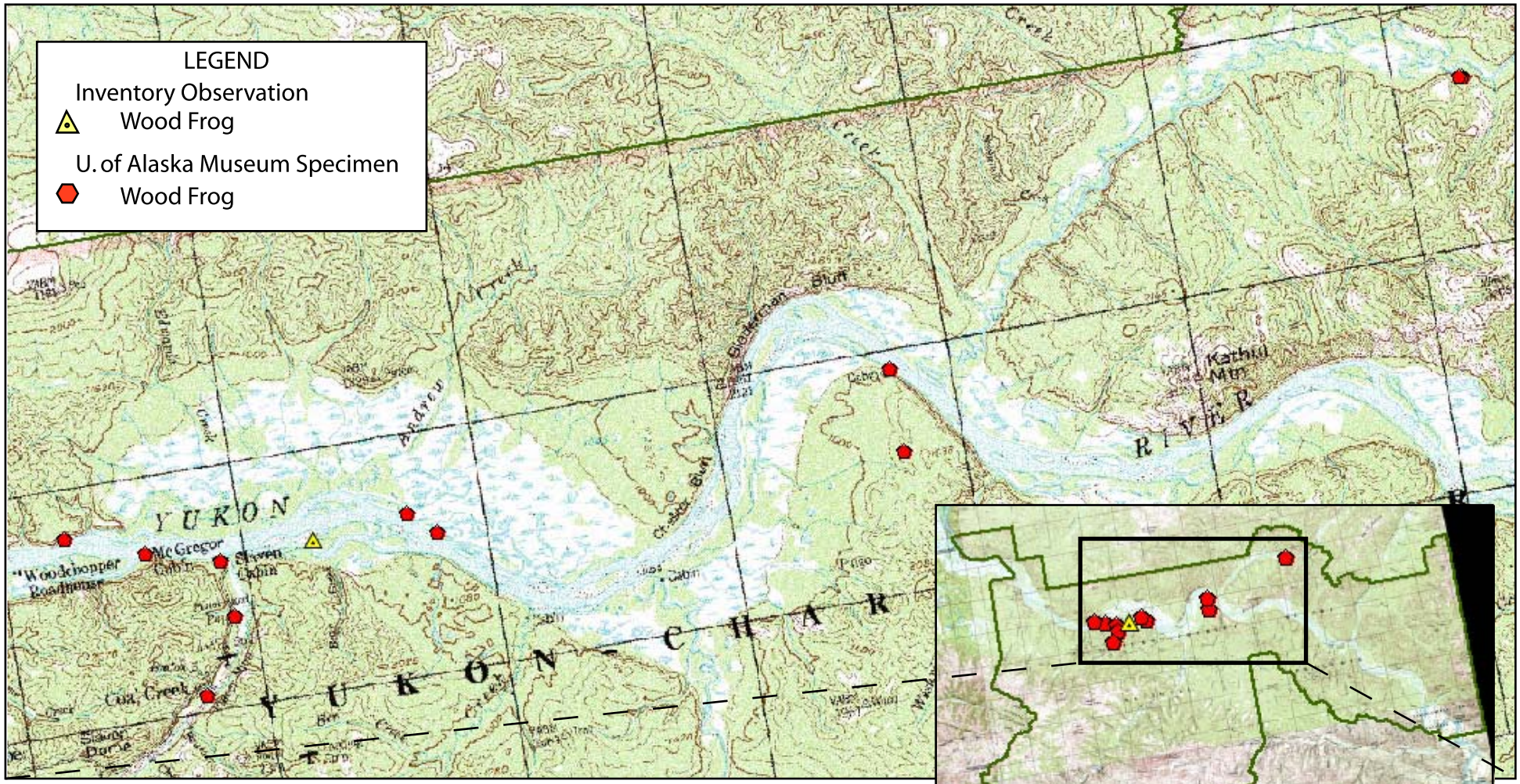

*An Opportunistic Amphibian Inventory in Alaska's National Parks, 2001-2003*

*Appendix 5. Location Maps by Park, Wrangell - St. Elias NP & Pres.*

*Calling Data from Jim Wilder, NPS, 2002*

National Park Service
Alaska Region
Inventory & Monitoring Program
**Opportunistic Amphibian Inventory 2001-2003**

# Yukon - Charley Rivers N Preserve




*An Opportunistic Amphibian Inventory in Alaska's National Parks, 2001-2003*

*Appendix 5. Location Maps by Park, Yukon - Charley Rivers N Pres.*

*Appendix 6. University of Alaska Museum Amphibian Collections from the National Parks*

| Cat num | Name | Latitude | Longitude | Datum | Max error | Quad | Feature | Specific locality | Date | Collector | Other id | Encumbrances |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Herp 131 | Rana sylvatica | 63.9294 | -151.495833 | NAD27 | 100 m | Mt. McKinley | Denali National Preserve | Chilchukabena Lake | 18 Jul 2002 | Stephen O. MacDonald | 62656 (AF Number) | None |
| Herp 132 | Rana sylvatica | 63.929167 | -151.50278 | NAD27 | 100 m | Mt. McKinley | Denali National Preserve | Chilchukabena Lake | 16 Jul 2002 | Stephen O. MacDonald | 62577 (AF Number) | None |
| Herp 133 | Rana sylvatica | 63.930278 | -151.5 | NAD27 | 100 m | Mt. McKinley | Denali National Preserve | Chilchukabena Lake | 16 Jul 2002 | Stephen O. MacDonald | 62575 (AF Number) | None |
| Herp 134 | Rana sylvatica | 63.9294 | -151.495833 | NAD27 | 100 m | Mt. McKinley | Denali National Preserve | Chilchukabena Lake | 16 Jul 2002 | Stephen O. MacDonald | 62552 (AF Number) | None |
| Herp 135 | Rana sylvatica | 63.9294 | -151.495833 | NAD27 | 100 m | Mt. McKinley | Denali National Preserve | Chilchukabena Lake | 16 Jul 2002 | Stephen O. MacDonald | 62553 (AF Number) | None |
| Herp 140 | Rana sylvatica | 63.9278 | -151.491944 | NAD27 | 100 m | Mt. McKinley | Denali National Preserve | Chilchukabena Lake | 17 Jul 2002 | Stephen O. MacDonald | 62643 (AF Number) | None |
| Herp 141 | Rana sylvatica | 63.9278 | -151.491944 | NAD27 | 100 m | Mt. McKinley | Denali National Preserve | Chilchukabena Lake | 17 Jul 2002 | Stephen O. MacDonald | 62644 (AF Number) | None |
| Herp 142 | Rana sylvatica | 63.9294 | -151.495833 | NAD27 | 100 m | Mt. McKinley | Denali National Preserve | Chilchukabena Lake | 15 Jul 2002 | Stephen O. MacDonald | 62492 (AF Number) | None |
| Herp 143 | Rana sylvatica | 63.930278 | -151.5 | NAD27 | 100 m | Mt. McKinley | Denali National Preserve | Chilchukabena Lake | 15 Jul 2002 | Stephen O. MacDonald | 62464 (AF Number) | None |
| Herp 144 | Rana sylvatica | 63.92778 | -151.491944 | NAD27 | 100 m | Mt. McKinley | Denali National Preserve | Chilchukabena Lake | 15 Jul 2002 | Stephen O. MacDonald | 62465 (AF Number) | None |
| Herp 216 | Rana sylvatica | 68.133 | -151.75 | unknown | 1600m | Chandler Lake | Gates of the Arctic National Park | Anaktuvuk Pass | prior to 1999 | | | |
| Herp 291 | Rana sylvatica | 67.34661 | -153.66475 | NAD27 | 150 m | Survey Pass | Gates of the Arctic National Park | S side of Takahula Lake | 29 Jul 2003 | Amy M. Runck | | Reserved for genetic analysis |
| Herp 292 | Rana sylvatica | 67.34661 | -153.66475 | NAD27 | 150 m | Survey Pass | Gates of the Arctic National Park | S side of Takahula Lake | 27 Jul 2003 | Amy M. Runck | | Reserved for genetic analysis |
| Herp 293 | Rana sylvatica | 67.34661 | -153.66475 | NAD27 | 150 m | Survey Pass | Gates of the Arctic National Park | S side of Takahula Lake | 31 Jul 2002 | Amy M. Runck | | Reserved for genetic analysis |
| Herp 298 | Rana sylvatica | 67.1267 | -154.3631 | unknown | 8 mi | Survey Pass | Gates of the Arctic National Park | Walker Lake | 08 Aug 2002 | Amy M. Runck | | Reserved for genetic analysis |
| Herp 299 | Rana sylvatica | 67.1267 | -154.3631 | unknown | 8 mi | Survey Pass | Gates of the Arctic National Park | Walker Lake | 08 Aug 2002 | Amy M. Runck | | Reserved for genetic analysis |
| Herp 217 | Bufo boreas | 58.41833 | -136.809722 | unknown | 4 mi | Mt. Fairweather | Glacier Bay National Park and Preserve | Dixon River | sum 1974 | E. Wolf | | None |
| Herp 218 | Bufo boreas | 58.41833 | -136.809722 | unknown | 4 mi | Mt. Fairweather | Glacier Bay National Park and Preserve | Dixon River | sum 1974 | E. Murrel | | None |
| Herp 219 | Bufo boreas | 58.41833 | -136.809722 | unknown | 4 mi | Mt. Fairweather | Glacier Bay National Park and Preserve | Dixon River | sum 1974 | E. Murrel | | None |
| Herp 220 | Bufo boreas | 58.41833 | -136.809722 | unknown | 4 mi | Mt. Fairweather | Glacier Bay National Park and Preserve | Dixon River | 28 Jun 1974 | E. Wolf | | None |
| Herp 221 | Bufo boreas | 58.41833 | -136.809722 | unknown | 4 mi | Mt. Fairweather | Glacier Bay National Park and Preserve | Dixon River | 11 Jul 1974 | E. Murrel | | None |

*Appendix 6. University of Alaska Museum Amphibian Collections from the National Parks (cont.)*

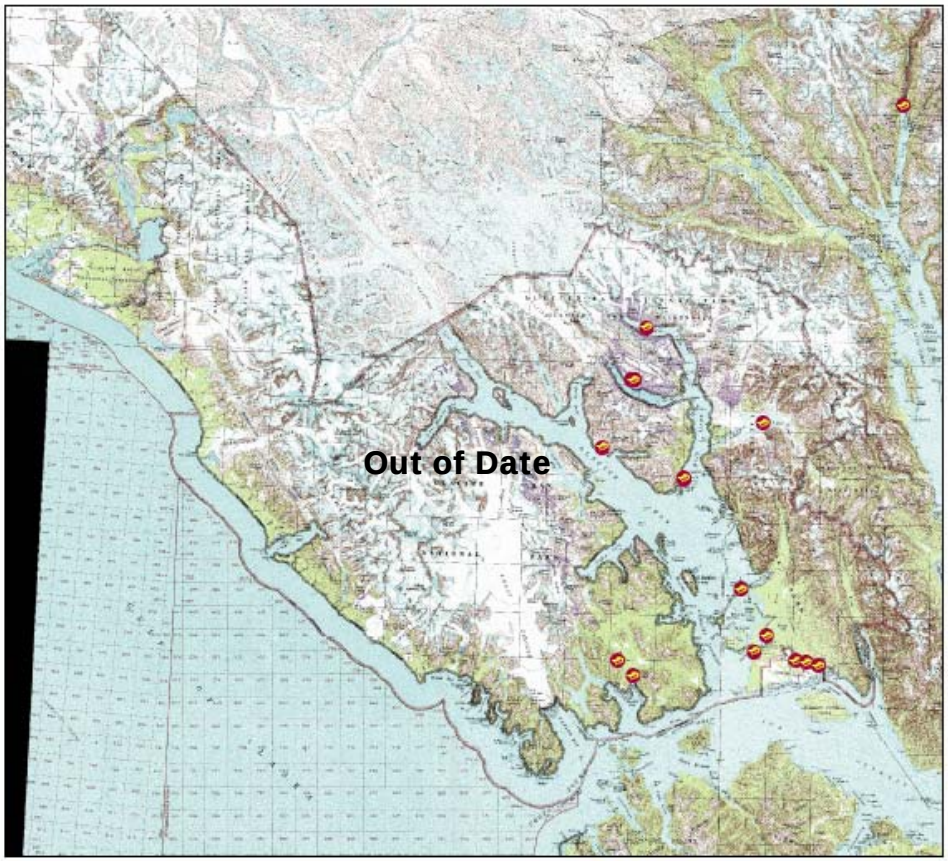
| Cat num | Name | Latitude | Longitude | Datum | Max error | Quad | Feature | Specific locality | Date | Collector | Other id | Encumbrances |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Herp 275 | Bufo boreas | 59.48 | -135.3478 | unknown | 1600m | Skagway | Klondike Goldrush National Historic Park | mouth of Taiya River | 01 Jul - 20 Aug 1995 | | | |
| Herp 290 | Bufo boreas | 59.5041 | -135.3508 | unknown | 8000m | Skagway | Klondike Goldrush National Historic Park | Dyea near Taiya River | 16 May 1982 | | SOM 587 | |
| Herp 276 | Rana sylvatica | 67.0903 | -159.77788 | NAD27 | 100 m | Baird Mts. | Kobuk Valley National Park | confluence of Kallarichuk River and Kobuk River | 06 Aug 2001 | Vadim B. Fedorov | 48649 (AF Number) | Reserved for genetic analysis |
| Herp 295 | Rana sylvatica | 67.10638 | -158.26679 | NAD27 | 100 m | Ambler River | Kobuk Valley National Park | Onion Portage | 10 Aug 2003 | Vadim B. Fedorov | 48715 (AF Number) | Reserved for genetic analysis |
| Herp 296 | Rana sylvatica | 62.3137167 | -141.180883 | NAD27 | 500 m | Nabesna | Wrangell-St. Elias National Park and Preserve | Carden Hills | 22 Jul 2001 | Eric P. Hoberg | 55104 (AF Number) | Reserved for genetic analysis |
| Herp 125 | Rana sylvatica | 61.3656 | -143.4425 | NAD27 | 100 m | McCarthy | Wrangell-St. Elias National Preserve | Ruby Lake | 06 Aug 2002 | Stephen O. MacDonald | 63233 (AF Number) | None |
| Herp 126 | Rana sylvatica | 61.3656 | -143.4425 | NAD27 | 100 m | McCarthy | Wrangell-St. Elias National Preserve | Ruby Lake | 06 Aug 2002 | Stephen O. MacDonald | 63232 (AF Number) | None |
| Herp 127 | Rana sylvatica | 61.45578 | -143.7895278 | NAD27 | 75 m | McCarthy | Wrangell-St. Elias National Preserve | 1 mi E of Chokosna Lake | 05 Aug 2002 | Stephen O. MacDonald | 63194 (AF Number) | None |
| Herp 128 | Rana sylvatica | 61.458056 | -143.80944 | NAD27 | 100 m | McCarthy | Wrangell-St. Elias National Preserve | Chokosna Lake | 05 Aug 2002 | Stephen O. MacDonald | 63117 (AF Number) | None |
| Herp 129 | Rana sylvatica | 61.456944 | -143.79611 | NAD27 | 100 m | McCarthy | Wrangell-St. Elias National Preserve | Chokosna Lake | 05 Aug 2002 | Stephen O. MacDonald | 63137 (AF Number) | None |
| Herp 130 | Rana sylvatica | 61.456944 | -143.79611 | NAD27 | 100 m | McCarthy | Wrangell-St. Elias National Preserve | Chokosna Lake | 05 Aug 2002 | Stephen O. MacDonald | 63138 (AF Number) | None |
| Herp 136 | Rana sylvatica | 61.456944 | -143.79611 | NAD27 | 100 m | McCarthy | Wrangell-St. Elias National Preserve | Chokosna Lake | 04 Aug 2002 | Stephen O. MacDonald | 63464 (AF Number) | None |
| Herp 137 | Rana sylvatica | 61.45694 | -143.79611 | NAD27 | 100 m | McCarthy | Wrangell-St. Elias National Preserve | Chokosna Lake | 04 Aug 2002 | Stephen O. MacDonald | 63367 (AF Number) | None |
| Herp 138 | Rana sylvatica | 61.45578 | -143.7895278 | NAD27 | 75 m | McCarthy | Wrangell-St. Elias National Preserve | 1 mi E of Chokosna Lake | 04 Aug 2002 | Stephen O. MacDonald | 63478 (AF Number) | None |
| Herp 139 | Rana sylvatica | 61.458056 | -143.80944 | NAD27 | 100 m | McCarthy | Wrangell-St. Elias National Preserve | Chokosna Lake | 04 Aug 2002 | Stephen O. MacDonald | 63390 (AF Number) | None |
| Herp 107 | Rana sylvatica | 65.355467 | -143.18225 | NAD27 | 500 m | Charley River | Yukon-Charley Rivers National Preserve | McGregor Cabin | 17 Aug 2001 | Stephen O. MacDonald | 53047 (AF Number) | Reserved for genetic analysis |
| Herp 108 | Rana sylvatica | 65.3488167 | -143.12055 | NAD27 | 500 m | Charley River | Yukon-Charley Rivers National Preserve | Slavens Cabin, Coal Creek, Yukon River | 07 Aug 2001 | Stephen O. MacDonald | 52556 (AF Number) | |
| Herp 109 | Rana sylvatica | 65.36553 | -143.24825 | NAD27 | 500 m | Charley River | Yukon-Charley Rivers National Preserve | Yukon River across from Woodchopper Roadhouse | 14 Aug 2001 | Stephen O. MacDonald | 52911 (AF Number) | Reserved for genetic analysis |
| Herp 110 | Rana sylvatica | 65.4429167 | -142.007383 | unknown | 500 m | Charley River | Yukon-Charley Rivers National Preserve | Kandik River just below Johnson Gorge | 31 Jul 2001 | Stephen O. MacDonald | 53305 (AF Number) | Reserved for genetic analysis |
| Herp 111 | Rana sylvatica | 65.44313 | -142.009183 | NAD27 | 500 m | Charley River | Yukon-Charley Rivers National Preserve | Kandik River just below Johnson Gorge | 31 Jul 2001 | Stephen O. MacDonald | 53369 (AF Number) | Reserved for genetic analysis |
| Herp 112 | Rana sylvatica | 65.32885 | -143.115433 | NAD27 | 500 m | Charley River | Yukon-Charley Rivers National Preserve | Coal Creek | 16 Aug 2001 | Stephen O. MacDonald | 53007 (AF Number) | Reserved for genetic analysis |

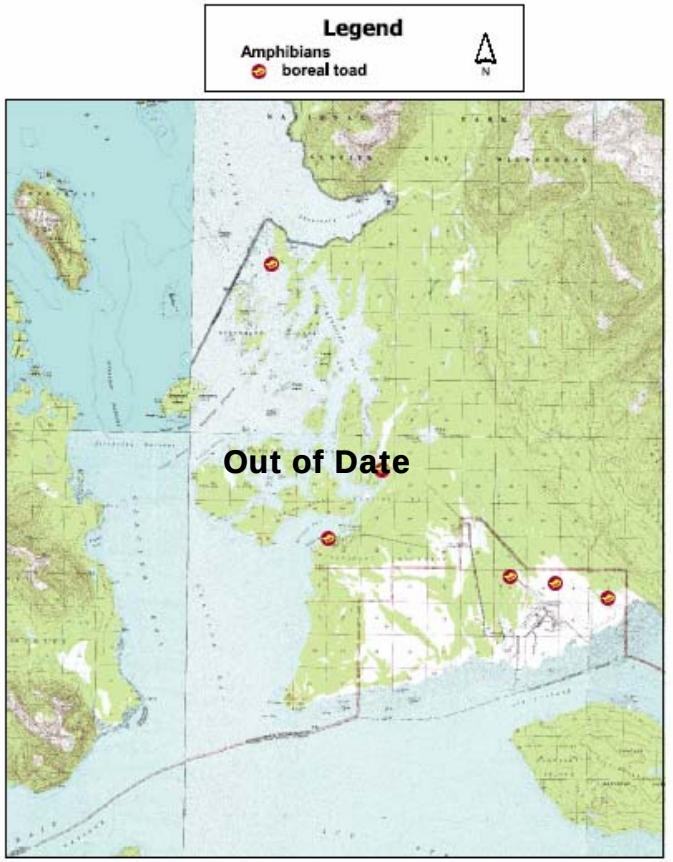
*Appendix 6. University of Alaska Museum Amphibian Collections from the National Parks (cont.)*

| Cat num | Name | Latitude | Longitude | Datum | Max error | Quad | Feature | Specific locality | Date | Collector | Other id | Encumbrances |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Herp 113 | Rana sylvatica | 65.302233 | -143.1503167 | NAD27 | 500 m | Charley River | Yukon-Charley Rivers National Preserve | Coal Creek | 16 Aug 2001 | Stephen O. MacDonald | 53015 (AF Number) | Reserved for genetic analysis |
| Herp 114 | Rana sylvatica | 65.302233 | -143.1503167 | NAD27 | 500 m | Charley River | Yukon-Charley Rivers National Preserve | Coal Creek | 16 Aug 2001 | Stephen O. MacDonald | 53016 (AF Number) | Reserved for genetic analysis |
| Herp 115 | Rana sylvatica | 65.3465 | -142.934167 | NAD27 | 500 m | Charley River | Yukon-Charley Rivers National Preserve | Andrew Creek Flats | 11 Aug 2001 | Stephen O. MacDonald | 52782 (AF Number) | Reserved for genetic analysis |
| Herp 116 | Rana sylvatica | 65.35475 | -142.957083 | NAD27 | 500 m | Charley River | Yukon-Charley Rivers National Preserve | Andrew Creek Flats | 10 Aug 2001 | Stephen O. MacDonald | 52661 (AF Number) | Reserved for genetic analysis |
| Herp 117 | Rana sylvatica | 65.3465 | -142.53167 | NAD27 | 500 m | Charley River | Yukon-Charley Rivers National Preserve | Andrew Creek Flats | 11 Aug 2001 | Stephen O. MacDonald | 52783 (AF Number) | Reserved for genetic analysis |
| Herp 286 | Rana sylvatica | 65.376389 | -142.53167 | unknown | 0 m | Charley River | Yukon-Charley Rivers National Preserve | Kandik Cabin | 14-18 Aug 2001 | John Burch | | Reserved for genetic analysis |
| Herp 287 | Rana sylvatica | 65.376389 | -142.53167 | unknown | 0 m | Charley River | Yukon-Charley Rivers National Preserve | Kandik Cabin | 14-18 Aug 2001 | John Burch | | Reserved for genetic analysis |
| Herp 288 | Rana sylvatica | 65.376389 | -142.53167 | unknown | 0 m | Charley River | Yukon-Charley Rivers National Preserve | Kandik Cabin | 14-18 Aug 2001 | John Burch | | Reserved for genetic analysis |
| Herp 289 | Rana sylvatica | 65.376389 | -142.53167 | unknown | 0 m | Charley River | Yukon-Charley Rivers National Preserve | Kandik Cabin | 14-18 Aug 2001 | John Burch | | Reserved for genetic analysis |

# Add a Toad!
# Amphibian Observation Sites 2001-2003

**National Park Service**
**Alaska Region**




**INSTRUCTIONS**

1. Write the number on a sticker that corresponds with the next available spot on the tracking table.
2. Place the sticker on the location map.
3. Fill in the tracking table entry with your information.
4. Complete a field form and give it to Lewis Sharman. (Very important)
5. Congratulate yourself. You've just added to the known locations of amphibians in Alaska!

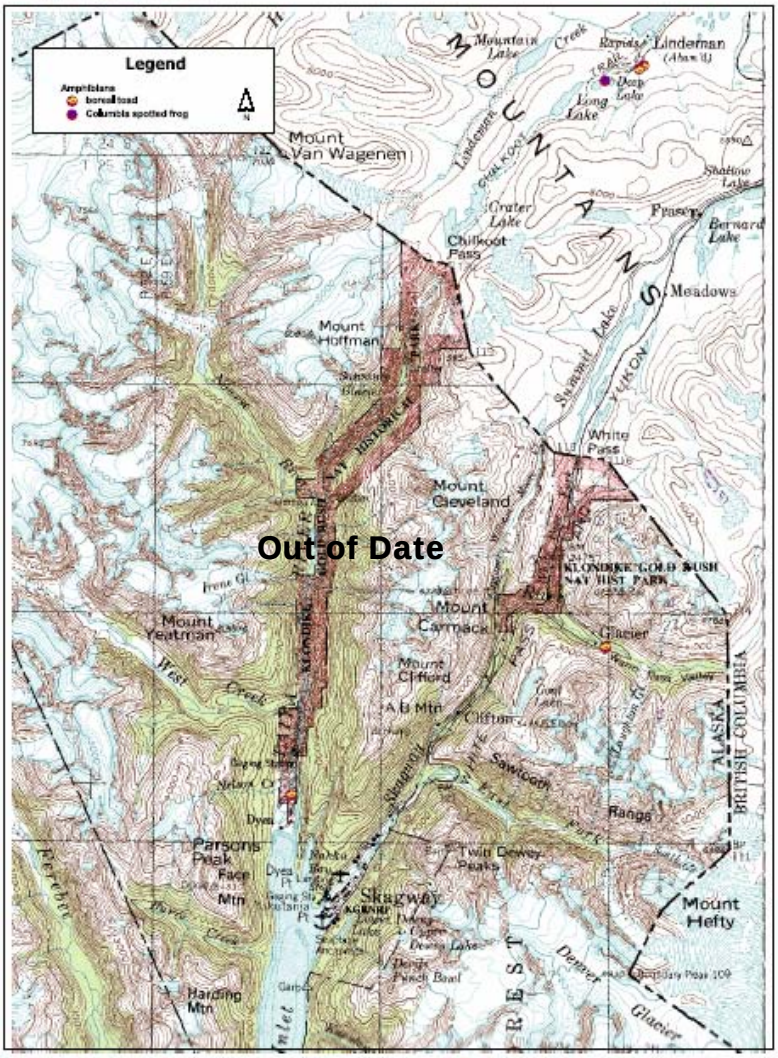
This information will be used scientists for years to come. And you might win a cool prize. Good luck!

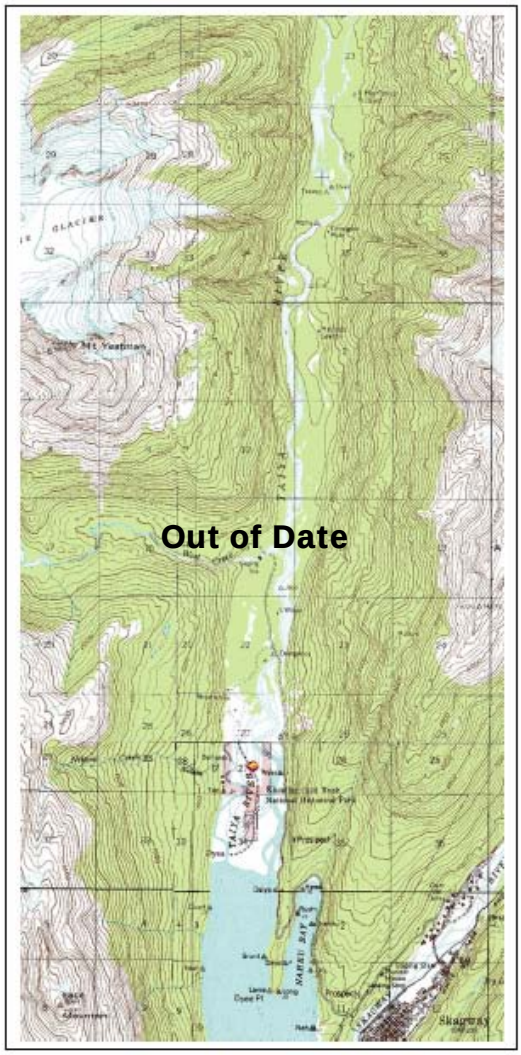
**Add a Toad!**
**Amphibian Observation Sites 2001-2003**

**National Park Service**
**Alaska Region**

**INSTRUCTIONS**

1. Write the number on a sticker that corresponds with the next available spot on the tracking table.
2. Place the sticker on the location map.
3. Fill in the tracking table entry with your information.
4. Complete a field form and give it to Meg Hahr. (Very important)
5. Congratulate yourself. You've just added to the known locations of amphibians in Alaska! This information will be used scientists for years to come. And you might win a cool prize. Good luck!




End