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Amphibians and Reptiles of the Flathead Indian Reservation

Abstract

Amphibians and reptiles on the Flathead Indian Reservation in western Montana were surveyed at 203 sites between 1993 and 1997. Each survey took 30 min to 2 hr and consisted of a thorough search of the wetland perimeter and netting of near-shore aquatic habitats for larvae and tadpoles. Some streams were sampled by electrofishing. We found 14 of the 18 species of amphibians and reptiles that most likely occur on the reservation. The long-toed salamander (Ambystoma macrodactylum), *Pacific chorus frog* (Pseudacris regilla), *and Columbia spotted frog* (Rana luteiventris) *were common but their populations were diminished in open areas of the Mission Valley compared to nearby forested areas. Western toads* (Bufo boreas) *were seen at 19 sites, but we observed reproduction at only six sites between 1993 and 1995. The northern leopard frog* (Rana pipiens), *which historically occurred in the Mission Valley, was not found anywhere despite extensive searches, including a search of six known historical sites. Tailed frogs* (Ascaphus truei) *were found in seven mountain streams. Bullfrogs* (Rana catesbeiana), *apparently introduced at two or three locations in the Lower Flathead River area in the 1970s, were reproducing successfully at two localities along the Flathead River and along approximately 14 km of Camas Creek. The painted turtle* (Chrysemys picta), *common garter snake* (Thamnophis sirtalis) *and western garter snake* (Thamnophis elegans) *were found in all regions surveyed. The western rattlesnake* (Crotalis viridis), *bullsnake* (Pituophis catenifer), *racer* (Coluber constrictor), *rubber boa* (Charina bottae), *and northern alligator lizard* (Elgaria coerulea) *were seen occasionally.*

Key Words: amphibian, decline, Montana, reptile, survey.

Introduction

Increasing concern about diminishing amphibian populations worldwide has prompted many state and federal agencies to inventory local species. On the Flathead Indian Reservation in western Montana, concern has been growing about apparent declines in populations of northern leopard frogs and western toads. In the spring of 1993, the Confederated Salish and Kootenai Tribal (CSKT) Wildlife Division requested a long-term survey of amphibian and reptile species present on the reservation. Previous sightings of some species within reservation boundaries were reported by Brunson and Demaree, (1951), Franz and Lee (1970), Franz (1971), and Miller (1975), but this represented the first comprehensive survey.

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Methods and Materials

For purposes of sampling, the reservation was divided into six geographic regions (Fig. 1): 1) Little

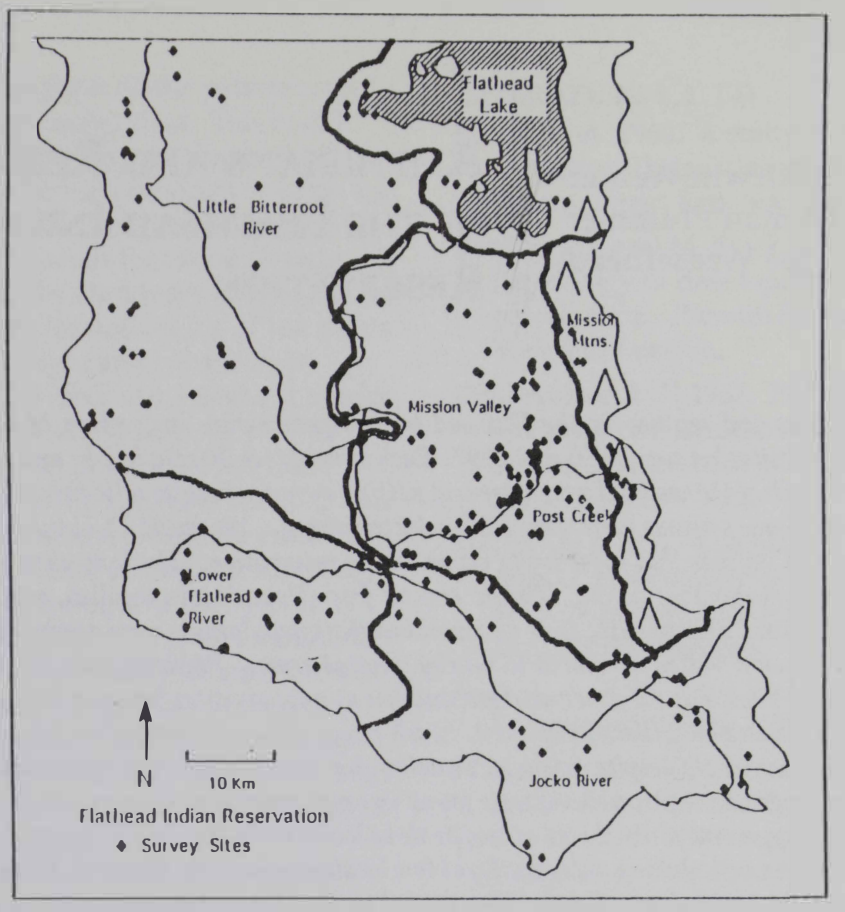

Figure 1. *Geographic regions and survey sites on the Flathead Reservation 1993-1997.*

Bitterroot River drainage in the northwest part of the reservation; 2) Flathead Lake region, which included areas within approximately 8 km of the lake shoreline; 3) Mission Valley, including the Kicking Horse and Ninepipes Tribal and National Wildlife Refuges, parts of the National Bison Range and several state wildlife management units; 4) Mission Mountains, above 1370 m elevation; 5) Jocko River drainage, in the southeastern part of the reservation; and 6) Lower Flathead River, from the confluence of the Jocko River to the western edge of the reservation, including the Camas Creek drainage. We sampled all areas to some extent but spent more time in the Mission Valley because of the extensive ponds and associated wetlands found there. We spent less time in the Mission Mountains, because of inaccessibility and time limits.

Extensive surveys were conducted during the spring and summers of 1993 and 1994. Resurvey of previous sites and a limited number of new surveys were conducted from 1995 to 1997.

Surveys were conducted by a team of 2 to 5 individuals. Each survey, 30 min to 2 hr in length, consisted of searches along the shoreline of a pond or wetland, and included overturning rocks and logs, dipnetting for tadpoles and larvae, and scanning the area with field glasses. Minnow traps and night (audio) surveys were used on an irregular basis. Canoes were used to access riparian habitats not available on foot including larger lakes, reservoirs and the Flathead River. In the summer of 1994, electrofishing was used in mountain streams to assess the status of the tailed frog. A section of stream 10 to 100 m in length was shocked, using a frequency of 120 cps and 200-250 volt output. As soon as tadpoles or adults

were found, electrofishing stopped. This often occurred in the first 10 m of the stream. If no individuals were found in a 100 m stretch of stream, the stream was sampled at some other point, or not sampled again.

In each survey, we attempted to capture all individuals seen, which were then identified, measured for body and total lengths, sexed if possible, and released. Water temperature, pH, and a general description of the area were recorded. Casual observations and records of roadkills were made by the authors and tribal Fish and Wildlife personnel. Causal observations provided data on the species, date, time, and location.

We estimated egg numbers for some amphibian species via direct counts or volumetric displacement (Corn and Livo 1989).

We made 289 surveys and casual observations, which included 266 time-constrained surveys, four roadkills, eight night-time audio surveys, and 11 reliable observations from other wildlife personnel. The 266 surveys encompassed 203 sites (Fig. 1) (Appendix A). Multiple surveys were made at 46 of the sites.

Ninety-three sites were in the Mission Valley that included 35 pothole ponds around Ninepipes and Kicking Horse Reservoirs and ponds and wetlands on the National Bison Range. In the Little Bitterroot River drainage, 25 sites were surveyed that included three in the Mill Pocket Tribal Primitive area. Seventeen sites were surveyed around Flathead Lake, three of them along the lake shore, the others in nearby wetlands, ponds or lakes including one at the King's Point Nature Conservancy Area. Twenty-eight sites were surveyed in the Jocko River drainage that included four in the Jocko Tribal Primitive Area. The Lower Flathead River accounted for 30 sites, one of which encompassed the 1992 Conoco Oil Company oil spill on Camas Creek. Ten sites were surveyed in the Mission Mountains including two at Mollman Lakes, just east of the reservation boundary.

Results

Amphibian and/or reptile species were found at 146 (72%) of the 203 surveyed sites in the six study areas (Figs. 2-5, Appendix A). The species included 1 salamander, 4 frogs, 1 toad, 1 turtle, 1 lizard, and 4 snakes. Records of collections and observations are summarized species-by-species in the text that follows.

Species Collected or Observed

Long-toed salamander. — Individuals were found throughout the reservation, from elevations of 804 m in ponds near Perma on Hwy 200 to 2,092 m in ponds near Mollman Lake in the Mission Mountains (Fig. 2a). Long-toed salamanders *(Ambystoma macrodactylum)* occurred commonly with the spotted frog *(Rana luteiventris)* in ponds, lakes or backwaters of streams but sometimes were the only amphibian present. Individuals were absent from the numerous ponds in and around the Ninepipes and Kicking Horse Wildlife areas but were found in forested habitat just east of the refuges and in ponds at the picnic area of the National Bison Range. The earliest observation of egg masses was 7 April 1995 at the Mollman Creek South Ponds. Egg masses varied from 1 to 72 eggs/mass ($x = 28$; $n = 18$). Body lengths of three adults were 45, 49 and 65 mm.

Pacific chorus frog. — Most chorus frogs *(Pseudacris regilla)* were found on the western side of the reservation along the Lower Flathead River and in the Little Bitterroot drainage (Fig, 2c). Breeding populations were encountered infrequently in the Mission Valley and along the base of the Mission Mountains. In the 1993-94 surveys, we observed individuals or heard calling at 29 sites between 3 May and 5 June. The highest elevation site was 1,222 m on

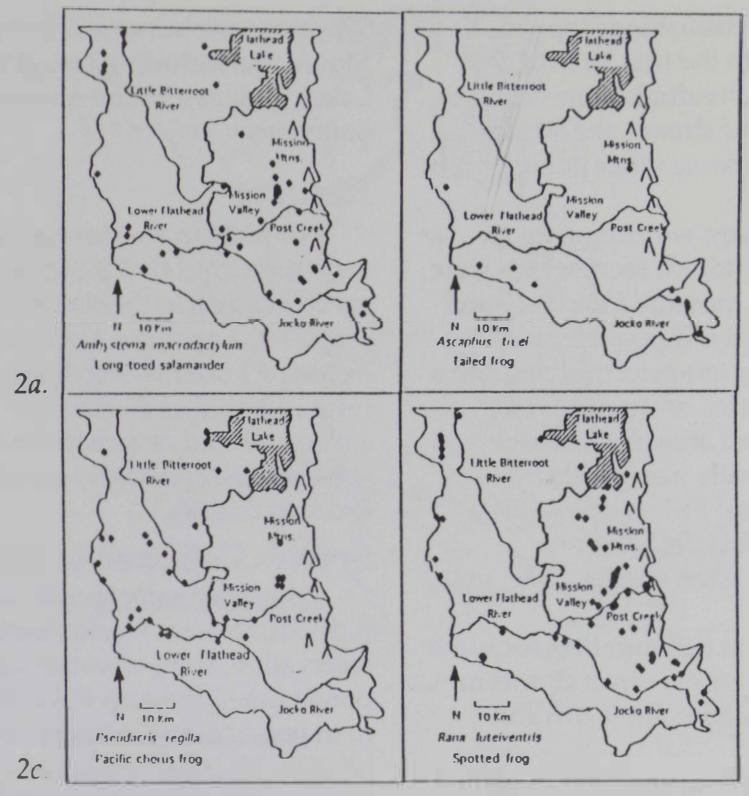

Figure 2. *Distribution of amphibians on the Flathead Reservation, through 1997.*

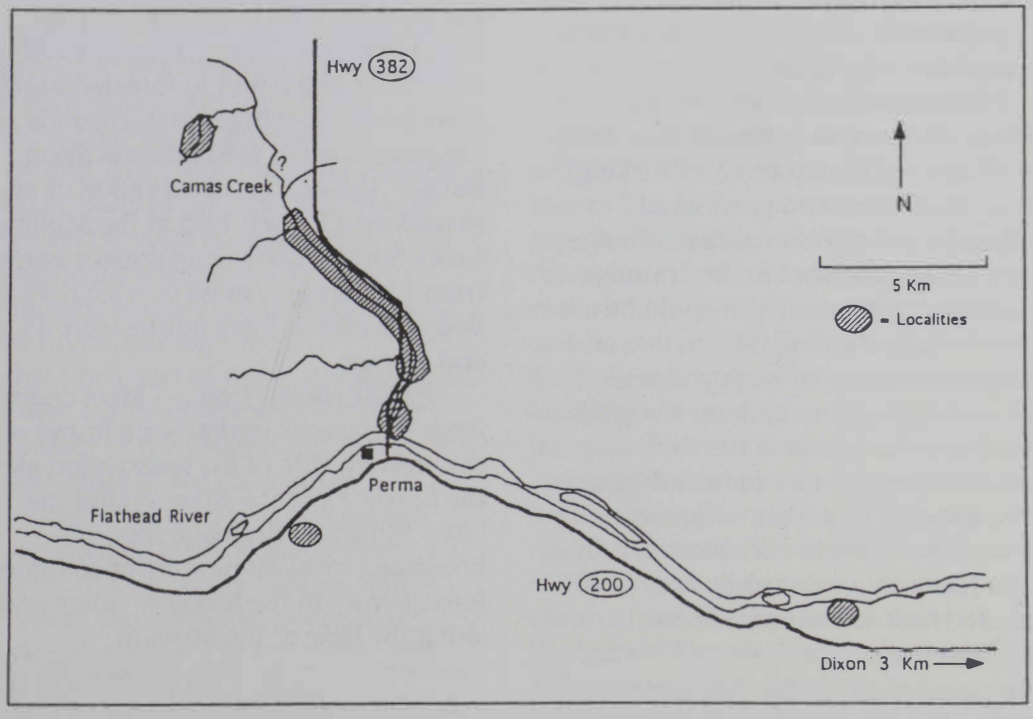

Figure 3. *Distribution of* Rana catesbeiana *(bullfrog) on the Flathead Reservation through 1997.*

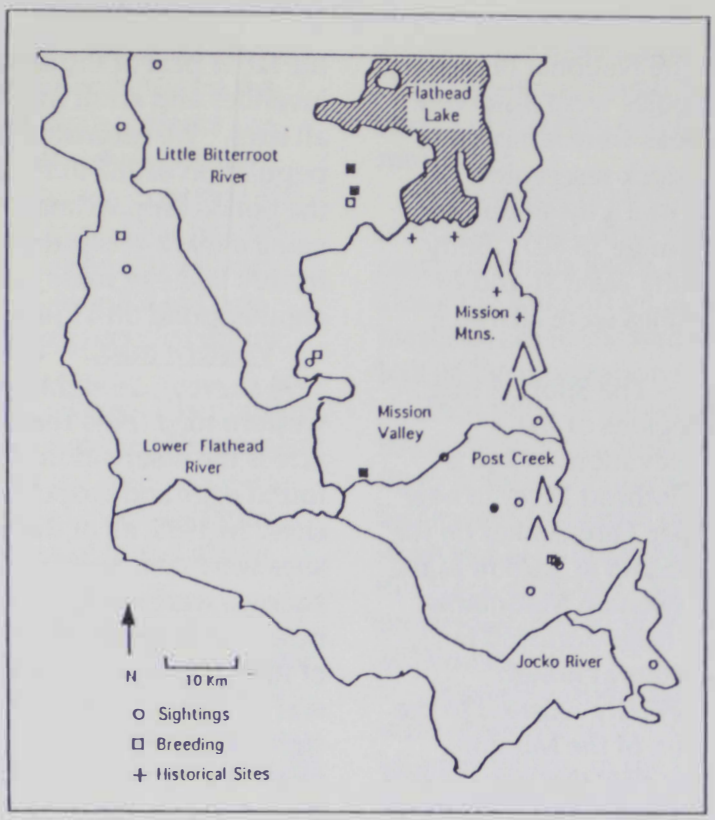

Figure 4. *Distribution of* Bufo boreas *(western toad) on the Flathead Reservation through 1997.*

Figure 5. *Distribution of reptiles on the Flathead Reservaton, through 1997.*

Triskey Creek on the National Bison Range, where tadpoles were observed. Many breeding areas were temporary ponds, including stock reservoirs. Seven egg masses had a mean number of 35 eggs/mass (range 18-52). Body lengths of two adults were 31 and 49 mm and two juveniles were 20 mm each.

Spotted frog. — The Spotted frog was found in all regions of the reservation from elevations of 762 m along the Lower Flathead River to over 2,072 m at the upper Three Lakes on the Reservation Divide and at 1878 m in the Frog Lakes of the Mission Mountains (Fig. 2d). Spotted frogs occurred in most wetland habitats although numbers were markedly reduced in the open pothole region of the Mission Valley. The earliest date that egg masses were found was 27 Mar 1994 at the State Fish Hatchery in Arlee. Breeding sites generally contained 3-15 egg masses but an exception was Pistol Creek Marsh where approximately 70 egg masses were observed in 1994 (>62,000 eggs). An average of 824 eggs per mass was determined (range 204-1319; n = 21). We observed some egg mortality in 1994 that resulted from pond waters receding before tadpoles had hatched. The average body length of 54 adults was 65 mm (range 50-90 mm); the average body length of 21 juveniles was 40 mm (range 30-55 mm).

Bullfrog. — The currently known range of the bullfrog *(Rana catesbeiana)* consists of two disjunct sites on the lower Flathead River and scattered sites along Camas Creek (Fig. 3). The two sites on the Flathead River were separated by 19 km of river in which no bullfrogs were found. Along Camas Creek, bullfrogs were present intermittently from the mouth of the creek to 14 km upstream, where they may have been introduced. There were small stretches of 50-400 m along the creek where they were not found because the stream had dried up during the latter part of the summer. Tadpoles, juveniles and adult frogs were found at all sites. We estimated a tadpole population of 287 individuals for one of the ponds (approximately 8 x 8 m) using a mark-recapture procedure. A freshly laid egg mass was found in another pond on 11 July.

Western toad. — During the 1993-1994 surveys, 16 sightings of the western toad *(Bufo boreas)* were made across the reservation (Fig. 4). We found eggs and tadpoles at six of these sites. In 1995, all of the previous known sites were resurveyed. Additional surveys were made in nearby areas. We observed tadpoles and/or eggs at three of the resurveyed sites and at one new site. Two other individual toads were sighted in 1996-97 for a total of 19 observations throughout the 4 yr study. Ten adults averaged 88 mm in body length (range 60-110 mm).

Western Painted turtle. — Painted turtles *(Chrysemys picta)* were present in most lowland aquatic habitats below 1,067 m (Fig. 5a). Densities were particularly high in ponds in and around the Ninepipes and Kicking Horse Wildlife Refuges and may have resulted from efforts to increase waterfowl production by eliminating egg predation from skunks, raccoons, and weasels. These are the same ponds where spotted frogs and long-toed salamanders were absent. Egg laying was observed 9 June 1993 at the Pablo Reservoir. The carapace length of four adults averaged 173 mm (range 150-200 mm).

Common Garter snake. — The common garter snake *(Thamnophis sirtalis)* occurred in all regions of the reservation between elevations of 766 and 1,268 m (Fig. 5c). Two color variants were observed; one with a red-spotted, bright yellow stripe (28 of 48 specimens) and a second with more dull yellow stripes and few or no red spots (20 of 48 specimens). Both variants occurred together, as well as with the

western garter snake. We could find no geographical correlation between the two color variants. Both variants are described by Rossman *et al.*, (1996). Body lengths of 16 adults averaged 463 mm (range 290-680 mm), total lengths averaged 577 mm (range 320-810 mm). Young were seen in August, but, we have no other information concerning reproduction.

Western Garter snake – Distribution of the western garter snake *(Thamnophis elegans)* overlapped the common garter snake in all regions of the reservation, but, was the only snake found above 1,524 m (Fig. 5c). The highest occurrence was at 1,878 m, Frog Lake in the Mission Mountains. There was one western garter snake sighting for every three common garter snakes. Body lengths of seven individuals varied from 305-580 mm, (x = 401 mm). Total lengths averaged 533 mm (range 410-720 mm).

Species Observed Infrequently

We found tailed frogs (*Ascaphus truei)* in three streams from the Mission mountains on the east, three streams from the Reservation Divide on the south and one stream from the Salish mountains on the western edge of the Reservation (Fig. 2b). Tadpoles were encountered in all streams and juveniles and adults were found occasionally. Body lengths of two adults were 36 and 45 mm.

One alligator lizard *(Elgaria coerulea)* was observed in 1993 in the North Crow Canyon of the Mission Mountains at 1372 m (Fig. 5b). A second sighting was made in 1997 along McDonald Lake (1128 m) also in the Mission Mountains. Both sites were on south-facing talus slopes.

Rubber boas *(Charina bottae)* were seen primarily along small streams in ponderosa pine forests. The four localities, North Crow Canyon, Mill Pocket Tribal Primitive Area, Magpie and Seepay Creek drainages, are on the forested eastern, western and southern edges of the reservation (Fig. 5b). The single adult measured had a body length of 490 mm and total length of 560 mm.

One juvenile racer *(Coluber constrictor)* was observed along Hwy 382 north of Perma and a second individual along the Ronan-Hot Springs road. Both localities are in the more arid, western half of the reservation (Fig 5d).

Roadkills in the western half of the reservation accounted for two of the three bullsnake observations (Fig. 5d). Bullsnakes *(Pituophis catenifer)* also were observed at Hillside Reservoir east of the Flathead River. Total lengths of four bullsnakes averaged 880 mm (range 770-1028 mm).

Western rattlesnakes *(Crotalis viridis)* were observed in the western half of the Mission Valley, in the Little Bitterroot drainage and along the lower Flathead River (Fig. 5d). Three individuals were found in open sagebrush country and two sightings were in ponderosa pine forests. Total lengths of three rattlesnakes averaged 714 mm (range 530-1012 mm).

Species Potentially Present on The Reservation

Tiger salamander. — One historical sighting of the tiger salamander (*Ambystoma tigrinum*) was made on the reservation near Ravalli in the late 19th century (Test 1891). Efforts to locate individuals near the historical site were unsuccessful, nor were they found elsewhere. The Ravalli specimens, which are in the National Museum of Natural History, Washington D. C., were re-examined by Dr. R. P. Reynolds in March 1998, and identified as long-toed salamanders based on gill-raker count.

Coeur d'Alene salamander. — The nearest location for the Coeur d'Alene salamander *(Plethodon idahoensis)* is Cascade Creek, 9.7 km west of the reservation (Teberg 1965.) Suitable habitat (springs, seeps) are present in nearby Seepay Creek drainage, but

efforts to locate the species were unsuccessful.

Leopard frog. — No leopard frogs *(Rana pipiens)* were seen at any of the 203 survey sites including surveys of eight known historical sites. Populations may exist in areas not covered by our surveys, but it probably should be considered as extirpated from the reservation.

Western skink. — Reports were received of the western skink *(Eumeces skiltonianus)* on the lower Flathead River, and near Evaro within reservation boundaries, but, we have no confirmed records. Western skinks have been reported in the Bitterroot Valley (Rodgers and Jellison 1942) and in the Kootenai National Forest (Werner and Reichel 1994).

Discussion

The probable decline of the northern leopard frog follows a pattern observed in Colorado (Corn and Fogelman 1984), Washington (Leonard and McAllister 1996), and other parts of the country (Hine *et al.* 1981). In western Montana, surveys done for the Montana Natural Heritage Program in the Bitterroot (Hendricks and Reichel 1996) and the Kootenai (Werner and Reichel 1994, 1995) National Forests found only one population in the Fortine District near Eureka. Additional surveys by the authors and others in the Flathead National Forest and surrounding areas, including surveys of over 20 historical sites, revealed one additional population near Kalispell. Although some populations probably were missed in our surveys, we conclude that a major decline of the Northern leopard frog has occurred in western Montana, including the Flathead Reservation.

The western toad recently has been of special concern to biologists because of dwindling populations throughout the west (Blaustein and Olson 1991, Carey 1993, Corn *et al.* 1997). Additional concern arose when Blaustein *et al.* (1994a) showed that the eggs of the western toad were especially sensitive to UV-B radiation and may suffer damage as a result of ozone destruction in the stratosphere. In experiments similar to those of Blaustein et al. (1994a), Corn (1998) was unable to find UV-B effects on the western toad in Colorado. Apparently a worldwide pathogenic fungus (*Saprolegnia*) is also contributing to western toad declines in Oregon (Blaustein *et al.* 1994b).

Brunson (1952) regarded the western toad as one of the most common anurans in western Montana. Black (1970) supported its common occurrence not only in the west, but also in many counties east of the continental divide. From historical records and the 1993-95 surveys, 22 sightings and/or breeding sites are known on the reservation (Fig. 4). Two of the historical sites were on Flathead Lake where no toads were seen in the present surveys.

Surveys in the Kootenai National Forest (Werner and Reichel 1994, 1995) indicated 15 breeding sites throughout the forest although large tracts of the forest were not surveyed. Reichel (1995) found only one breeding site in surveys of the Lewis and Clark National Forest. Three of 16 western toad sightings in the Bitterroot National Forest (Hendricks and Reichel 1996) were indicated as reproductive (eggs and tadpoles) and Marnell (1997) listed 14 documented breeding sites in Glacier National Park. Given the area encompassed in the above references and the comments by Brunson (1952) and Black (1970), the data suggest a population reduction. However, without a larger historical database, it is difficult to ascertain whether the numbers are a low point in a long term population fluctuation or an anthropogenic related decline.

The bullfrog has been widely introduced throughout the western United States from its native habitat in eastern North America. It has been

implicated as displacing other species in California (Kupferberg 1994, 1997), Iowa (Lannoo *et al.* 1994) and Ontario (Hecnar and M'Closkey 1997) because of its aggressive feeding and territorial behavior. Bullfrogs apparently were introduced into the Bitterroot Valley of western Montana by unknown sources in the 1920s (Black 1970). Based on conversations with local residents, we believe that introductions on the Flathead Reservation occurred at two and perhaps three sites in the 1970's. The geographical source(s) of the introduced populations is unknown. Populations along Camas creek appear to be the result of a range expansion, individuals moving downstream from a release site.

It is speculative whether bullfrogs are displacing native species on the reservation. Pacific chorus frogs were heard calling from two sites simultaneously with bullfrogs but whether the chorus frogs successfully reproduced is unknown, because no thorough searches were done for tadpoles at later dates. There were no spotted frogs observed at any of the bullfrog sites although spotted frogs were found in nearby areas.

Although the reservation was divided into six geographic regions for survey purposes, differences in amphibian/reptile distribution corresponded somewhat to three north-south zones. The three zones are delineated by elevation and rainfall. An eastern zone, formed by the higher elevations of the Mission Mountains, supported four species, long-toed salamander, spotted frog, western toad, and western garter snake. A central zone consisting of the Flathead Lake region, the Mission Valley and Jocko River drainage, contained all 14 species, dominated by the long-toed salamander, spotted frog, painted turtle, common garter snake and western garter snake. A more arid western zone, which inluded the Little Bitterroot drainage and lower Flathead River, had the same number and dominate species as the central zone, but supported larger populations of three snake species (racer, bullsnake, western rattlesnake) and had a higher incidence of the Pacific chorus frog.

Conclusions

Based on a literature review, personnel observations, and general field guides, nine amphibian and nine reptile species were considered possible inhabitants of the Flathead Reservation. This survey found six amphibian species and eight reptile species.

Although most amphibian species appeared to be successfully reproducing in suitable habitats, evidence suggests that the northern leopard frog has been extirpated from most, if not all, of its historical range and that populations of the western toad are at low levels. Populations of the spotted frog, long-toed salamander and Pacific chorus frog were diminished in open agricultural lands and in wildlife refuges of the Mission Valley in comparison to nearby forested areas.

The single historical record of the tiger salamander on the reservation was apparently a misidentification and there were no other sightings of the tiger salamander during these surveys. Two other species, the Coeur d'Alene salamander and western skink, which do not have historical records on the reservation, may be present, but have not been found to date.

Among reptiles, the painted turtle, common and western garter snakes were frequently encountered, but, the status of their populations is unknown due to a lack of current and historical data. Five other reptile species were seen occasionally.

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Appendix A. Summary of amphibian/reptile surveys and observations on the Flathead Indian Reservation 1993-1997. Data are arranged by geographic region.[1]

Survey/ Other[2]	Geographic Region Locality	UTM Zone 11 East.	North.	Elev. (m)	Species Year,Reprod.[3]
Little Bitterroot River					
S	Dry Fork Creek, 1.3 km W of D. Fk. Res.	671774	5291552	927	NSF 94
S	Dry Fork Reservoir	674172	5285967	966	BUBO 93R, 95; THSI 93
S	Flathead R. backwater 1 km N. Sl. Bri.	701716	5263432	783	CHPI 94
L	Garceau Gulch Rd, 14.5 km E. of Hwy 28	689330	5286071	1167	COCO 94
S	Garden Cr. Rd., 3.2 km W Hwy 28.	674904	5280860	866	BUBO 93
S	Garden Cr. by Morigeau Rd	674172	5280189	866	RALU 93
S	Garden Cr. Trib. 6.4 km W. of Hwy 28	672112	5280715	975	RALU 94
S	Hot Springs Cr. 1.6 km W. of Hot Spr.	673376	5275376	974	PSRE 94R
A	Hot Springs by H.S. Athletic Field	675584	5274980	861	PSRE 93R
S	Hwy 28, 4.8 km NE of Toolman Slough	675743	5268465	1009	PICA 94
S	Little Bitter. R. at Lozeau Flats Cmpgrd	673885	5304497	957	RALU 93, 94, 95R THSI 93; THEL 95
S	Little Bitterroot R. below Lozeau Canyon	674154	5299434	876	RALU 95
S	Little Bitterroot R. Lozeau Canyon Site	674094	5302279	902	AMMA 93R, 94R, 95R RALU 93R, 94, 95R BUBO 94 THSI 93, 95; THEL 93, 94
S	Little Bitterroot R. on Far West Rd.	675197	5294032	850	CHPI 93
S	Lit. Bitter. R, 1 km below Lit. Med. Cr.	673586	5305972	939	AMMA 93R; RALU 93 THSI 93
S	Lit. Meadows Cr. 2 km NW of Flat. Mine	679254	5312356	1202	BUBO 93; AMMA 95R RALU 93, 95
S	Mill Creek where crosses irrigation ditch	673563	5300007	890	AMMA 93R; CHBO 93 THEL 93
S	Mill Creek 0.8 km above Little Bitter. R.	673278	5299501	908	NSF 94
S	Oliver Point area N. of Oliver Point	696353	5273611	1341	NSF 94
S	Ronan-Hot Springs Rd. J. Malinak Res.	690476	5270071	829	PSRE 93R, 95R
A	Ronan-Hot Spr. Rd, 7 km W. Sloan Br.	695641	5261145	838	PSRE 93R
A	Ronan-Hot Spr. Rd, 15 km W. Sloan Br.	691630	5264267	849	PSRE 93R
A	Ronan-Hot Spr. Rd, 7 km E. Hwy 28	685005	5275889	832	PSRE 93R
A	Ronan-Hot Spr. Rd, 10 km E. Hwy 28	686447	5273490	827	PSRE 93R
L	Ronan-Hot Spr. Rd, 9 km E. Hwy 28	685201	5274906	838	CRVI 93
R	Ronan-Hot Spr. Rd., 11 km E. Hwy 28	685913	5273600	832	PICA 93
S	Schmitz Lakes, 1.6 km E of Hwy 382	681736	5269707	974	NSF 93, 94
R	Skunk Alley Rd., 0.5 km W. of Hot Spr.	674545	5274763	887	THEL 93
S	Sull. Cr., 3.4 km S of Nirada	689501	5295680	868	NSF 93
S	Sull. Cr., 8 km N of Hwy 28, B. M. Rd.	683905	5307282	978	NSF 93
S	Upper Dry Fork Reservoir, South side	673482	5290704	892	THEL 93
S	Valley Creek 12.8 km WSW of Hwy 93	709544	5227580	1061	NSF 93
S	W. Flat. Mine Rd, Springs W. of road	679644	5309186	1073	AMMA 94R
Flathead Lake Drainage					
S	Black Lake	700252	5304456	988	CHPI 93, 95
S	Dayton Cr. at Black Creek Road	702253	5304834	899	RALU 93, 94, 95R PSRE 93R
S	Finley Point Rd, Pond 0.8 km SE of Rd	721388	5289678	888	RALU 93; CHPI 93
S	Flathead Lake by old Hwy 93 at Dayton	703496	5304509	882	NSF 93
S	Flathead Lk., S. Shore on Ducharme Ln.	719936	5286191	882	RALU 93R
S	Hellroaring Reservoir - outlet	726637	5293962	1097	RALU 95
S	Jette Lake	706191	5293074	1093	BUBO 95R; CHPI 94, 95
S	Jette Mead. Pnd, 3.2 km W of Hwy 93	705631	5291293	1039	BUBO 93R; CHPI 94

Appendix A. Continued.

Survey/ Other[2]	Geographic Region Locality	UTM Zone 11 East.	North.	Elev. (m)	Species Year,Reprod.[3]
S	Jette Pnd., 1.6 km W of Hwy 93	705469	5296294	1219	AMMA 94R, 95R BUBO 94R, 95R PSRE 94R, 95R; THSI 94
S	King's Point Nature Conservancy Area	713503	5296028	881	PSRE 93R, 95R; CHPI 93 THEL 93
S	Loon Lake south of Big Arm	701097	5290944	1052	NSF 93
S	Mike's Ponds	702387	5306974	948	NSF 94
S	Red Lake	700042	5305872	992	NSF 94
S	Spring Creek Pond ENE of Proctor	702297	5308483	1094	AMMA 94R, PSRE 94R THSI 94
S	Station Creek on Boulder Creek Road	725356	5294032	1186	NSF 93
S	Turtle Lake, 2.4 km S. of Hwy 35	719514	5283640	942	RALU 93, CHPI 93, THSI 93
S	Wymore Lake on Matterhorn Pt. Rd.	712018	5296414	881	NSF 93
Jocko River Valley					
S	Agency Cr. where crosses feeder canal	727810	5223368	1122	NSF 93
S	Belmore Sloughs, off S. Fk. of Jocko R.	739984	5229631	1506	RALU 93R, 95R; THSI 93
S	Boles Meadow on Boles Creek	747329	5221307	1728	AMMA 93R, 94R RALU 93R, 94R; BUBO 94
S	Falls Cr. crosses Jocko R. Div. Can.	737270	5234839	1268	ASTR 94R
S	Feeder Can. 2.1 km mi NE of Agency Cr.	728950	5225738	1125	AMMA 93R; RALU 93R THSI 93
S	Finley Cr. Tributary, 1.6 km S of Arlee	721104	5226208	948	NSF 93
S	Finley Creek, 3.2 km ESE of Evaro	723446	5212139	1253	NSF 93
S	Frog Creek, 1.6 km N of Evaro	721440	5213789	1228	NSF 93
S	Hwy 93 Grav. Pit, 3.2 km SE of Arlee	723457	5225212	975	AMMA 93R
S	Hwy 200, 2 km E. of Dixon. Pnd on N.	704804	5242524	796	PSRE 93R
S	Hwy 200, 3 km E. of Dixon. Pnds on N.	706165	5242138	782	RALU 93; CHPI 93; THSI 93
S	Jocko R. at Jocko R. Diversion Can.	712240	5239882	817	RALU 94
S	Jocko R. backwater, 1 mi W of Ravalli	712783	5239434	825	NSF 94
S	Jocko R. Diversion Canal. Pond on W.	740665	5234141	1283	RALU 93, 95R
S	Jocko R., 6 km below Lower Jocko Lk.	739644	5234440	1270	AMMA 93R; RALU 93 THSI 93
S	Jocko R., Mid. Fk., 1 km above dam	740327	5234623	1268	RALU 94
S	Jocko R., Mid. Fk., 1 km W of div. dam	739644	5234440	1267	AMMA 93R; RALU 93
S	Jocko R., River. Cpgrd. 2 km N Arlee	719909	5228758	905	CHPI 93
S	Jocko R., S. Fk. at Entrance Cpgrd.	739148	5231546	1222	ASTR 94R
S	Jocko R., S. Fk, 3 km above Liberty Cr	745440	5220672	1570	ASTR 94R
S	Jocko R., S. Fk., 3 km ESE of Entrance	742001	5230393	1284	ASTR 94R; RALU 94
S	Jocko R., S. Fk., 5 km ESE of Entrance	742343	5229102	1326	ASTR 93, 94
S	Liberty Meadows on Liberty Creek	748324	5224750	1692	AMMA 93R; RALU 93R
S	Montana State Fish Hatchery, Arlee	721035	5228057	911	AMMA 93R; RALU 93R,94R
S	Nat. Bison Range, Elk Cr. on Per. Rd.	708548	5241296	838	AMMA 93R; RALU 93R
S	National Bison Range, Ravalli Potholes	714714	5241826	948	CHPI 93
S	Nat. Bison Range, Trisky Cr.	712517	5243755	1222	AMMA 93R; PSRE 93R
S	Pistol Cr. Marsh, 1.6 km N of Jocko R.	729550	5232780	1244	AMMA 93R, 94R, 95R RALU 93R, 94R, 95R BUBO 94
Lower Flathead River					
S	Burgess Lake	677038	5244870	883	NSF 93
S	Cam. Cr. by Hwy 382, 5 km N Hwy 200	682884	5252741	814	RACA 93R, 95; PSRE 95R
S	Camas Cr. Cont. Pnds. '92 Oilspill	673176	5262125	988	RALU 93, PSRE 93
S	Clear Creek Drainage, Ponds on South	680846	5249989	1030	AMMA 95R; PSRE 95R THSI 95

Appendix A. Continued.

Survey/ Other[2]	Geographic Region Locality	UTM Zone 11 East.	North.	Elev. (m)	Species Year,Reprod.[3]
S	Flathead R. backwater, Big Bend Moeise	701618	5248471	808	CHPI 93
S	Flathead R. old river channel, Big Bend	703919	5248179	807	PSRE 93; CHPI 93
S	Flathead R. backwater, N. of Old Agency	704217	5246150	770	CHPI 93
S	Flathead R., 1.6 km NW of Dixon	702121	5244842	768	CHPI 93
S	Flathead R., 3.7 km W of Rev. Cr.	694023	5243892	765	NSF 93
S	Flathead R., 1.3 km W of Mag. Cr.	689406	5244852	767	PSRE 93R
S	Flathead R., 4 km W. of Moiese	702763	5249469	774	CHPI 93
S	Hwy 200, 0.3 km E. of Mag. Cr.	690921	5244345	765	RALU 94; PSRE 94R
S	Hwy 200, 0.5 km E of Mag. Cr.	691148	5244321	762	PSRE 94R
S	Hwy 200, 3 km W. of Perma. Pnd on S	680467	5246609	766	RACA 93R, 95; PSRE 93R CHPI 93;THSI 93; THEL 93 CRVI 93
L	Hwy 382 Grav. Pit 6 km N of Hwy 200	682603	5253040	814	COCO 93R
S	Magpie Creek, 3 km S. of Hwy 200	690333	5241698	898	ASTR 94R
S	Magpie Creek, 3.7 km S of Hwy 200	690601	5241120	939	AMMA 93R
S	Nat. Bison Range, Pauline Cr.	709614	5246217	1082	AMMA 93R; PSRE 93R
S	Nat. Bison Range, Snake Pit on Per. Rd.	706250	5244357	917	NSF 93
S	Perma Pnd 3 km W of bri. on Hwy 382	680261	5247159	804	AMMA 93R; PSRE 93R,95R THSI 93, 94; CRVI 93
S	Rainbow Lake (Dog L) on Hwy 28	669410	5266115	1094	THSI 93; THEL 93
S	Rainbow Lk. Trib., 1.3 km N. of Cpgrd	669581	5267232	1195	ASTR 94R
L	Revais Cr., 0.8 km S. of Hwy 200	697849	5242533	835	CABO 94
S	Revais Creek 7.2 km S. of Hwy 200	696363	5236057	1134	ASTR 94R
S	Seepay Creek 4.8 km S. of Hwy 200	679862	5242389	890	ASTR 94R
S	Seepay Creek 8 km S of Hwy 200	680671	5240684	1002	ASTR 94R; CHBO 94
S	Sheep Springs on Br. of Gunderson Cr.	694093	5241697	1059	AMMA 93R
S	Sinkhole, Flat. R. by Revais Cr.	696887	5244386	789	RACA 93R; CHPI 93R THSI 93
S	Three Lakes, Lower (East) Lake	685181	5236375	1972	RALU 95
S	Three Lakes, Middle Lake	685211	5236128	2073	AMMA 93R; RALU 93
S	Three Lakes, Upper (West) Lake	684829	5236239	2085	AMMA 93R; RALU 93, 95
S	Toolman Marsh along Hwy 28	671801	5267297	1103	AMMA 93R, 94, 95R RALU 93R, 94, 95R PSRE 93R, 94R, 95R CHPI 93; THSI 93, 94, 95
Mission Mountains					
S	Frog Lake, North. Mission Mtns.	732496	5258430	1878	RALU 94R
S	Frog Lake, South. Mission Mtns.	732369	5258108	1878	BUBO 93; RALU 94R THEL 94
S	Long Lake	733425	5257602	1815	NSF 94
S	Mollman Lake, East	731374	5261975	2092	NSF 92, 94
S	Mollman Lk. West and Pond off SW end	730827	5262530	2092	AMMA 92R
S	Moon Lake	733298	5256728	1748	NSF 94
S	Mud Lake	725734	5277913	1765	NSF 94
S	Mud Lk. drainage, 1 km above Mud Lk.	726485	5277703	1832	NSF 94
S	Summit Lake	731554	5258850	1925	NSF 94
S	Summit Lk., Pond S. of, Mission Mtns.	731917	5258832	1606	RALU 94
Mission Valley					
S	Pnd, 3 km W of Hwy 93. W. Ps. Cr. Rd.	716464	5253698	887	RALU 97; CHPI 97
R	Can. Mill Rd. 1 km N. Jct N. Crow Rd.	722433	5273333	1036	THSI 93
A	Canyon Mill Rd., end of Rd.	722624	5273866	1044	PSRE 93R
S	Charlo Potholes 3.2 km NW of Charlo	710591	5261149	902	THSI 93

Appendix A. Continued.

Survey/ Other[2]	Geographic Region Locality	UTM Zone 11 East.	North.	Elev. (m)	Species Year, Reprod.[3]
S	Charlo Potholes 4.8 km NW of Charlo	710536	5262661	917	CHPI 93; THSI 93
S	Crow Cr. below Lower Crow Reservoir	707918	5263959	829	AMMA 95
S	Dinwoodie Pond, Hwy 93 by Allentown	719069	5256359	922	THEL 97
S	Dublin Gulch Creek by Dublin Gulch Rd	712879	5251899	838	NSF 93
S	Duck Rd. 0.6 km W of Hwy 93. N/S Pnds	718141	5261675	929	NSF 93
S	Duck Rd. 0.8 km W of Hwy 93. Pnds on S	718101	5261611	929	NSF 93
S	Duck Rd. 1.1 km W of Hwy 93. Pnds on N	717905	5261821	929	NSF 93
S	Eagle Pass Rd, Jct Hill. Rd. Pnds on N&S	722226	5258364	944	AMMA 93R, 94R; RALU 94 CHPI, 93
S	Ealge Pass Rd., 2 km E of Hwy 93	720681	5258089	930	THSI 93
S	F Canal S of McDonald Lake Rd.	720883	5254643	860	THSI 93
S	Flathead River at Buffalo Bridge	699392	5280412	808	THEL 94
S	Flathead R., 3 km above Buffalo Brid.	704518	5281532	820	NSF 94
S	Flathead R. 1.6 km below Buffalo Brid.	698952	5279223	802	PSRE 94
S	Pond 5 km W of Hwy 93 on W. P. Cr. Rd	714883	5252770	881	NSF 97
S	Gunlock Rd, 0.3 km E of Hwy 93	719672	5256378	922	NSF 93
S	Harriman Trt. Farm, 1 km W of Hwy 93	718482	5252443	832	AMMA 97R; RALU 93, 97 BUBO 93; THSI 93
A	Hillside Rd, 1.6 km S. of M. C. Rd	721895	5259928	974	PSRE 93R
S	Hillside Rd, 0.5 km N of Red. Rd	722457	5252253	884	RALU 93; THSI 93
S	Hillside Reservoir	707252	5253581	817	CHPI 93; PICA 93 CRVI, 93, 95
S	Horte Res., 4 km W of Round Butte Rd.	705264	5268470	920	CHPI 93; THSI 93
S	Hwy 93, 5 km S. of Ronan, Pnd on W	718529	5262955	921	CHPI 93
S	Kicking Horse Pond KH1	720787	5259268	931	CHPI 94
S	Kicking Horse Pond KH6	719965	5259453	931	CHPI 94; THSI 94
S	Kicking Horse Pond KH11	719783	5260868	931	THSI 94
S	Lower Crow Reservoir	709208	5264619	881	NSF 94
S	McDonald Lk., Dam and Post Crk. outlet	726883	5256626	1097	RALU 93; THEL 93
L	McDonald Lake, trail on North side	728151	5256459	1128	ELCO 97
S	Marsh Cr. Rd. 0.2 km N of Marsh Cr.	720962	5254869	866	NSF 93
S	Marsh Cr. Rd. 1.1 km S of E. P. Rd.	720856	5256701	933	NSF 93
S	Marsh Cr. Rd. 1.3 km S of E. P. Rd.	720861	5256553	933	NSF 93
S	Mission Cr. 1.3 km below Mission Res.	724409	5243486	963	THEL 94
S	Mission Cr. 2.9 km below Mission Res.	722880	5243146	943	NSF 94
S	Mission Creek along Sabine Road	717390	5245258	838	NSF 94
S	Mission Creek at bridge on Sabine Road	716197	5246579	836	RALU 94
S	Mission Cr. 0.8 km above Mission Res.	728256	5245210	1058	AMMA 93R; RALU 93 THSI 93
S	Mission Cr. 1.3 km above Res. by Cpgrd	728665	5245381	1070	BUBO, 94; THSI 94
S	Mission Dam	725180	5244103	1036	RALU 95; THEL 95
S	Mission Meadow Rd 3 km W of Hwy 93	715980	5272504	933	RALU 93R
S	Mission Mead. Rd. by RR tracks	716282	5272298	921	RALU 93; CHPI 93
L	Mission Reservoir, Rd. on North side	725284	5244755	1042	BUBO 94, 95R
S	Mollman Creek Rd., North Pond 2	722986	5262598	968	AMMA 93R, 95R RALU 93R, 94R, 95R THSI 93
A	Mollman Creek Rd., South Pond A	722204	5262319	952	PSRE 93R
S	Mollman Creek Rd., South Pond K1	723060	5261607	960	NSF 93, 95, 96
S	Mollman Creek Rd., South Pond K3	722916	5261635	960	AMMA 95R; 96R RALU 94, 95
S	Mollman Creek Rd., South Pond K4	722815	5261540	960	AMMA 94R, 95R RALU 94R 95R; CHPI 94, 96

Appendix A. Continued.

Survey/ Other[2]	Geographic Region Locality	UTM Zone 11 East.	North.	Elev. (m)	Species Year,Reprod.[3]
S	Mollman Creek Rd., South Pond K9	723369	5261767	960	NSF 94, 95, 96
S	Mollman Creek Rd., South Pond K10	723270	5261866	960	AMMA 95R; RALU 94R, 95R CHPI 94; THSI 94
S	Mollman Creek Rd., South Pond K13	722804	5261416	960	AMMA 95R, 97R RALU 95R, 97R
S	Mollman Creek Rd., South Pond S2	722875	5261140	960	AMMA 94R, 95R, 97R RALU 94R, 97R THSI 95, 97
S	Mollman Creek Rd., South Pond S5	722749	5261074	960	AMMA 95R; RALU 94R CHPI 94
S	Mollman Cr. Rd. & Hwy 93, Pnds to NE	719258	5262057	927	NSF 93
S	Mollman Cr. 1.3 km S of M. Cr. Rd.	725378	5260193	1001	NSF 94
S	Mud Creek, 4.8 km E of Hwy 93	721826	5278782	991	THSI 94
L	Mud Lake Trail, 2 km from trailhead	724959	5278224	1433	THSI 94
S	Naitonal Bison Range, Mission Creek	712349	5249034	805	THSI 93
S	National Bison Range, Fishing Access	708087	5249624	786	THSI 93; CHPI 93
S	Nat. Bison Range, Picnic Area Ponds	707155	5249900	777	AMMA 93R; PSRE 93R CHPI 93
L	Nat. Bison Range, Picnic Area Pond 4A	707155	5249900	777	BUBO 95R
S	Ninepipes Reservoir, both sides by dam	715931	5259540	916	NSF 96
R	N. Foothills Rd, 1 km N. of Terr. L. Rd.	720636	5269193	945	THSI 93
L	N. Foothills Rd. 3 km N. of Terr. Lk. Rd.	720594	5270638	967	RALU 93
L	N. Crow Can. Tr., 2.6 km E of trailhead	727080	5273698	1378	CHBO 93
S	N. Crow Can. Tr., 3.2 km E of trailhead	727686	5273814	1402	ELCO 92
S	N. Crow Cr. Div. Pond off Cany. Mill Rd.	722598	5271104	991	NSF 93
S	North Crow Creek at Campground	724433	5273410	1122	ASTR 94R
S	Olson Rd 0.5 km W of Hwy 93. Pnd on N	718568	5256281	917	NSF 93
S	Olson Rd 0.8 km W of Hwy 93. Pnd on S	718498	5256130	915	NSF 93
S	Pablo F.C. bet. Terr. Lk. & Can. Mill Rds	723007	5270582	997	NSF 93
D	Pablo F. C., 0.5 km N of Canyon Mill Rd.	721607	5271400	998	AMMA 93
S	Pablo Reservoir, NW section by Res. Rd.	712705	5280729	972	AMMA 93R; RALU 93R CHPI 93
S	Pablo Res., Pnds on E. by spillway.	714739	5280031	969	RALU 93R; CHPI 93R THSI 93
S	Pistol Cr. Tributary along Pistol Cr. Rd	717577	5240870	978	NSF 93
S	Post Creek at bridge on Sabine Road	715437	5249580	814	THSI 94
S	Post Creek at Pablo Feeder Canal	725624	5257736	1006	NSF 94
S	Post Creek just W of Hwy 93	718961	5252921	835	NSF 97
S	Post Creek, 0.2 km above McDonald Lk.	729458	5255675	1100	AMMA 94R
S	Post Cr. 0.8 km S of Eagle Pass Cr. Rd.	724297	5257870	951	NSF 94
S	Redhorn Rd, 3.2 km E of Hwy 93	723248	5252530	896	RALU 93R; CHPI 93
S	Redhorn Rd, 3.2 km E of Hwy 93	723249	5251912	896	CHPI 93
S	Rnd. Butte Rd., Res.16 km W of Hwy 93	701217	5268051	872	BUBO 94R
S	Ronan-Pablo Hwy 93 Ponds W/E of Hwy	717609	5270879	927	RALU 93R; CHPI 93
S	Round Butte Road, Pond on South	699915	5266825	872	BUBO 95
S	Salish Kootenai College Ponds	717315	5275273	936	CHPI 93
S	South Crow Creek at Hammer Dam	724010	5263811	1003	RALU 94; THEL 94
S	S. Crow Cr. below Swartz Lake Road	725696	5264026	1134	NSF 94
S	St. Marys Lake, Springs 0.8 km South	732508	5237481	1253	NSF 94
S	St. Wild. Mgt. Area 4 km W of Hwy 93	715292	5254736	893	CHPI 93
S	Swartz Lake	726307	5265074	1196	AMMA 93R, 94R RALU 93, 94, 95 THSI 93, 94, 95

Appendix A. Continued.

Survey/ Other[2]	Geographic Region Locality	UTM Zone 11 East.	North.	Elev. (m)	Species Year,Reprod.[3]
S	Timberlane Rd., by Clarice Home Sites	722079	5265594	951	NSF 93
S	Timberlane Rd., by Woodcock Home Site	722350	5266622	948	AMMA 93R
S	Twin Lakes Marsh	734103	5236135	1253	AMMA 93R, 94R, 95R RALU 93R, 94R, 95R BUBO 93; THSI 93
S	Twin Lakes, North Lake	733605	5236826	1265	BUBO 94R, 95R
S	Twin Lakes, South Lake	733828	5236557	1265	BUBO 94R; THSI 94
S	Twin Lakes, Pond NW of North Lake	733584	5236980	1265	AMMA 94R; RALU 94
S	Twin Lks., Slew 3 km S. of South Lake	733656	5235159	1222	RALU 94, 95
S	Two Cr. Lane off Hill. Rd. Dennis Prop.	723074	5260282	981	RALU 93; CHPI 93
S	Two Cr. Lane off Hill. Rd. Martin Prop.	723054	5260188	951	RALU 93; PSRE 93R
S	Valley View Rd, 2 km N. of Rd. But. Rd.	676199	5268571	930	CHPI 93
S	W. Post Crk Rd 0.5 km E of Hwy 212	712090	5252687	881	CHPI 93
S	W. Post Cr. Rd 1.3 km W of Hwy 212	710123	5253127	871	CHPI 93
S	W. Post Cr. Rd 3-4 km W Hwy 93	713670	5253579	879	CHPI 93

[1]It is illegal to collect plant and animal specimens on the Flathead Reservation without the permission of the Confederated Salish and Kootenai Tribal Council.
[2]Other includes: A = Audio call; D = Found dead but other than roadkill; L = Observed alive; R = Roadkill
[3]Species: AMMA = *Ambystoma macrodactylum*; ASTR = *Ascaphus truei*; BUBO = *Bufo boreas*; CHBO = *Charina bottae*; CHPI = *Chrysemys picta*; COCO = *Coluber constrictor*; CRVI = *Crotalus viridis*; ELCO = *Elgaria coerulea*; NSF = No species found; PICA = *Pituophis catenifer*; PSRE = *Pseudacris regilla*; RACA = *Rana catesbeiana*; RALU = *Rana luteiventris*; THEL = *Thamnophis elegans*; THSI = *Thamnophis sirtalis*.
R - after the year indicates evidence of reproduction, i.e. eggs, larvae/tadpoles or calling adults