Status of the
Amended Salmon-Challis National Forest Plans
Management Indicator Species
Spotted Frog

November 2004

Introduction

The Columbia spotted frog is known to occupy slow-moving cool water streams, beaver ponds and marshy edges of lakes across the forest and have been found to use adjacent upland habitats as well. This species occurs at all elevations in a variety of forest and non-forest communities that are subjected to many different resource management activities ranging from grazing to timber harvest. They are known to be sensitive to changes in habitat parameters such as riparian vegetation, water temperatures and water and air quality. The Columbia spotted frog, an amphibian MIS for this Forest, is a true frog (family *Ranidae*) and, as do many amphibians, uses both aquatic and terrestrial habitats. Because of their unique combination of biological characteristics, amphibians including this species are considered to be sensitive indicators of habitat and environmental changes USFS 1994). Long term monitoring of population fluctuations and trend for this species, across the Forest, should help ascertain effects of various management actions and natural perturbations on both riparian and aquatic habitats it utilizes.

Habitat Distribution

Total acres and potential vegetation types within the riparian community/habitat type and distribution of this habitat/community type are displayed in Table 1 Figure 1.

Monitoring Protocols

The assessment of relative abundance of management indicator species (MIS) is included in the monitoring portion of the Salmon-Challis National Forest MIS Amendment (2004). Surveys for MIS should, thru time, provide data necessary to establish trends in relative abundance of the species across the forest, by habitat, and by management actions. Theoretically, having independent data points widely scattered across suitable habitats should allow extrapolation to larger areas of suitable habitat (Ralph et al. 1993). Commonly applied survey methods for amphibians include active sampling methods such as time constrained searches and area constrained searches (including habitat structure searches such as coarse woody debris), sweep samples, call surveys and egg mass counts and passive surveys such as audio data loggers for recording calls and pitfall traps (Dodd 2003). Time and area constrained searches are most useful for determining presence or absence of a species and for providing habitat data but are not generally suitable for providing population data (Corn and Bury 1990). Coarse woody debris searches can be used to provide population density estimates but such estimates only apply to one habitat feature and pitfall traps can be used to survey species diversity and abundance in various habitats but does not work well for all species and is best applied to define specific or specialized habitat features (Dodd 2003, Corn and Bury 1990). Egg mass counts over time, however, can provide data necessary to assess population trend for amphibian species such as the Columbia spotted frog (Crouch and Paton 2000). Although egg mass counts can give annual indications of population fluctuations or breeding success, apparent trends can only be established by collecting such data over many years, even decades. This is especially true given the effect of slight climatic changes or events such as short-term drought on amphibians such as the Columbia spotted frog, a vernal pool breeder.

Columbia spotted frogs will be monitored by the double-observer dependent egg mass count protocol (Cook and Jacobson 1979 and Nichols et al. 2000, as cited in Crouch and Paton 2000) in small vernal ponds. The double-observer dependent technique involves one observer counting and pointing out egg masses to a second observer who records them and any additional egg masses that observer one misses. Observers start at the north end of each selected pond and circumnavigate the pond together in

a clockwise fashion. Counts are conducted a minimum of twice, one to two weeks apart, beginning just after the time of maximal breeding activity. Therefore, actual time of monitoring visits may vary slightly between years, depending upon weather conditions. Site data collected includes location, size and type of vernal pool, substrate, distance to forest cover, adjacent land uses, water temperature, etc. (see Appendix 1 for selected data sheets). Where suitable habitats occur, a minimum of two ponds per Ranger District will be monitored each year. In an effort to increase sample size where suitable ponds are available, the same ponds will not be monitored each year but will be placed in a three-year rotation schedule. Ponds selected for monitoring will be relatively small and shallow to help ensure all egg masses are visible and counted and must be accessible during the early spring breeding season for this species. Selected sites will come from lists of ponds that were found to be occupied by Columbia spotted frogs during previous presence/absence surveys, as noted below.

Initial efforts to establish suitable permanent monitoring sites occurred this past spring, FY04. Twenty-six sites (Table 2) were monitored across the 7 districts with 14 sites scattered across 6 districts being completed to protocol. Of the 14 sites completed to protocol, egg masses were detected at 8 sites while only adult frogs, juveniles and/or tadpoles were observed at 4 sites and no presence of frogs was detected at two sites. Numerous sites selected as potentially suitable, based on known presence of spotted frogs, proved to be unsuitable due to difficulty of access during the early spring monitoring period, lack of amphibians observed, etc. In FY05, alternate sites will be selected to replace those that proved either unsuitable or uninhabited by spotted frogs and at least the minimum number of two suitable sites will be completed for the districts that did not meet the required number in FY04. In addition, some of the sites that were monitored to protocol may be replaced by other sites that prove more suitable for reasons such as access or that have better populations of spotted frogs at this time. Monitoring efforts during FY05 will complete the baseline monitoring for this species within the targeted five-year period.

Data Evaluation

During the early 1990's, many informal and formal surveys for the presence of amphibians, including Columbia spotted frogs, were conducted across the Salmon-Challis NF. The results of the formal surveys are compiled in various reports, including O'Siggins (1995), Churchwell (1996) and Yeo (1998) and most of the data is now included in the NRIS/FAUNA corporate database. In addition, one PhD study was completed (Pilliod 2001) that used mark-recapture and radio-telemetry techniques to investigate the ecology of this species and other amphibians in high-elevation habitats in the Big Horn Crags. As a results of these efforts and numerous less formal surveys and incidental observations made over the past two decades, Columbia spotted frogs were determined to be the most abundant and widespread amphibian on the forest and, with the exception of the Lost River Mountain Range, were found well distributed at all elevations wherever suitable habitat occurred. Efforts to commit all existing data for the Columbia spotted frog, into the NRIS/FAUNA database is ongoing. Data currently in the system is attached in the form of both GIS maps and printouts but is not to be considered complete.

Using the available baseline data, permanent monitoring sites were selected and surveyed this spring (FY04) on all Ranger Districts, using the egg mass count protocol described above. Each pond was marked on aerial photos and topographic maps, and located by explicit geographic reference using a Global Positioning System (GPS) instrument and later entered into the NRIS/Fauna corporate database, along with monitoring results. Egg masses were detected at these sites on all districts except the Middle Fork RD; however, adult frogs have been observed at numerous locations on this District and breeding is known to occur in high elevation lakes within the Frank Church River of No Return Wilderness. These known sites are virtually inaccessible during early spring so efforts will continue to locate suitable permanent monitoring sites at lower elevations on this District. Most selected sites proved suitable for long term monitoring and will be included in the monitoring rotation schedule. In some cases, however, sites did not prove suitable for a variety of reasons and will be dropped in favor of new ponds. Efforts to locate a minimum of three and up to a maximum of six ponds per District for inclusion in the monitoring schedule will increase the sample size and help determine population trend over time. Under this schedule at least one pond will be monitored on all Districts each year, with two being monitored annually

on most Districts. This should result in approximately 30 ponds being included in the schedule and help decrease the time period needed to assess population trend across the Forest.

Ponds or pools will be monitored at least two times each year, approximately one to two weeks apart, beginning just after peak breeding activity. Consequently, careful attention to selected sites each year will be critical to monitoring success since weather conditions may easily alter the actual time of peak breeding activity. Site and habitat data collected includes location, size, depth and type of pool or pond, substrate, water temperature, distance to forest cover, adjacent land uses, etc. (see Appendix 1 for selected data sheets).

Current Status

Although we have much data concerning presence of Columbia spotted frogs across the Forest and have identified and surveyed suitable sites for long term monitoring, sufficient monitoring data necessary to indicate trend have not yet been accumulated. Since the establishment of Riparian Habitat Conservation Areas (RHCA's) across the Forest and implementation of PACFish/INFish standards, which provide riparian buffer strips, riparian areas are considered to be universally in an upward trend. Because of this apparent upward trend in source habitat for and the extensive occurrence record of this species across the Forest, the population trend for Columbia spotted frogs on the Salmon-Challis NF is conservatively estimated to be stable. Recent wildfires, especially during FY2000, burned during conditions severe enough to allow stand replacing event to occur in some forested deciduous and coniferous riparian areas. However, the amount of riparian acres burned is less than one percent of the available acres on the Forest and is not considered a factor in overall habitat condition or trend for this species. Future monitoring may provide opportunities to assess fire effects.

Table 1 – Riparian Habitat/Community Type on the Salmon-Challis National Forest

GIS PVT Layer Designation	Acres
Cottonwood	8,334
Riparian Shrub	21,811
Aspen / Conifer	20,044
Riparian Grass	9,793
Riparian Sedge	521
Total Acres	**60,503**
Water	3,763

Figure 1 – Distribution of the Riparian Habitat/Community Type

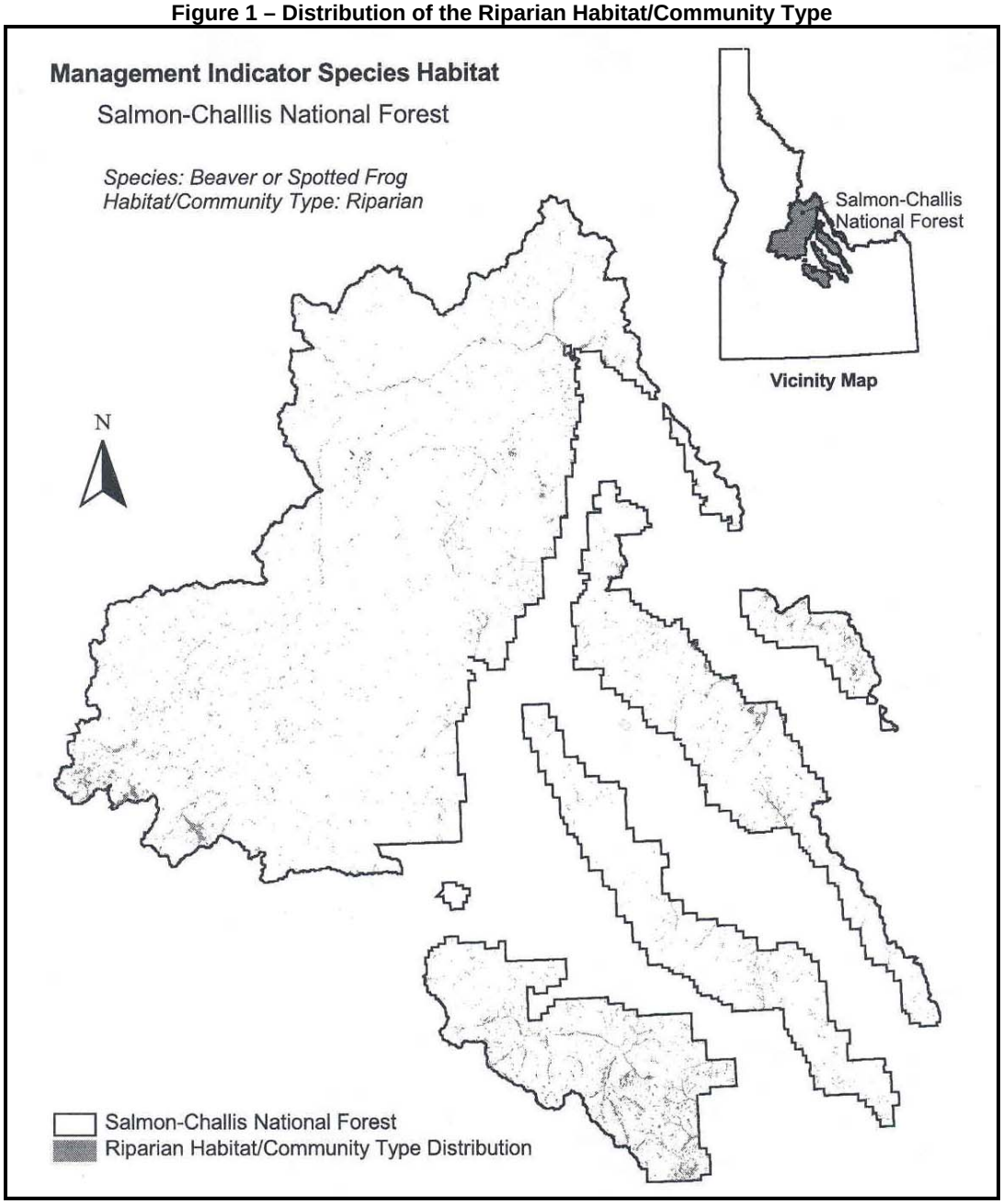

Table 2 – Salmon-Challis National Forest Spotted Frog Monitoring Sites and Counts - 2004

Location	District	Date	Egg Masses	Adult Frog	Juvenile Frog	Tadpole
Moyer A. Ponds	Salmon-Cobalt	03/19/04	0	9	0	0
		04/14/04	0	90	0	600
		06/04/04	0	25	1	300+
Powder House	Salmon-Cobalt	04/12/04	3	0	0	0
		04/21/04	0	0	0	0
		05/07/04	40	4	0	0
William's P&P	Salmon-Cobalt	05/07/04	0	9	0	0
		06/14/04	0	200+	0	500+
		06/18/04	0	90	0	600+
Challis Cr. B. Pond	Challis	04/06/04	0	0	0	0
		05/12/04	0	0	0	0
Block Cr. B. Ponds	Challis	04/07/04	0	0	0	0
Pine Summit #1	Challis	04/27/04	0	0	0	0
Pine Summit #2	Challis	04/27/04	25	3	0	0
Morgan Cr. Summit	Challis	06/14/04	0	2	0	0
Buster Lake Spring	Challis	06/15/04	0	0	0	0
Squaw Cr.	Yankee Fork	05/05/04	0	0	0	0
Camptender	Yankee Fork	06/07/04	0	0	0	0
Poker/Ayer	Yankee Fork	06/07/04	0	0	0	0
Banner Cr. B. Ponds	Yankee Fork	06/07/04	0	0	0	0
Little Bayhorse Pd.	Yankee Fork	06/21/04	0	0	0	0
Little Bayhorse Lk.	Yankee Fork	06/21/04	0	0	0	0
Bayhorse Lk.	Yankee Fork	06/21/04	0	25	0	0
Pond #1	Lost River	05/04/04	1	3	0	0
		05/11/04	12	0	0	0
		05/20/04	0	0	0	0
Pond #2	Lost River	05/04/04	0	1	0	0
		05/11/04	0	0	0	0
		05/20/04	0	1	0	0
Pond #3	Lost River	05/04/04	0	1	0	0
		05/11/04	0	0	0	0
		05/20/04	0	3	0	0
Boundary Cr. Pond	Middle Fork	05/18/04	0	0	0	0
		05/26/04	0	0	0	0
Hughes Barn Pond	North Fork	04/11/04	4**	0	0	0
		04/29/04	0	0	0	0
Lower Spring Cr.	North Fork	04/11/04	13	0	0	0
		05/02/04	0	0	0	0
Upper Spring Cr.	North Fork	04/11/04	15	0	0	0
		05/02/04	0	0	0	0
Grove Pond	Leadore	04/16/04	7	0	0	0
		04/27/04	13	0	0	0
		05/14/04	5	0	0	0
		06/21/04	0	0	0	30+
Quaking A. Pond	Leadore	04/16/04	0	0	0	0
		04/27/04	8	0	0	0
		05/14/04	5	0	0	0
		06/21/04	0	5	0	15+
Timber Cr. Res.	Leadore	04/16/04	0	0	0	0
		04/27/04	0	0	0	0
		05/14/04	0	0	0	0

**One of the 4 “egg masses” was very large and was composed of many individual egg masses but the actual number could not be determined.

FOCAL VERNAL POOL LOCATION ANS HABITAT DATA SHEET

LOCALITY:_____**VERNAL POOL NAME:**_____

OBSERVER:_____**DATE:**_____

DETAILED DIRECTIONS TO SITE:

_____
_____
_____

UTM ZONE:_____**UTM DATUM: NAD 83 UTM E:**_____**UTM N:**_____**ERROR: +/- _____m**

LATITUDE (DDMMSS.SS):_____**LONGITUDE:**_____**ELEVATION:**_____ m ft

POOL MAX. LENGTH:_____ m **POOL MAX. WIDTH:**_____m **POOL MAX. DEPTH:**_____ m

POOL PERMANENCY: temporary (dries annually) semipermanent (sometimes dries) permanent (never dries)

POND TYPE: (Check either Natural, Beaver-created, Artificial/Man-made, or Unknown):
- Natural (e.g., oxbow, vernal pool)
- Beaver-created
- Artificial/Man-Made – If pool is artificial/man-made, pick best description below:
  - borrow/gravel pit roadside ditch farm pond other:_____
- Unknown

SITE TYPE:
- upland-isolated (not part of larger wetland)
- bottomland-isolated (part of a river or lake floodplain)
- wetland complex (associated with a larger wetland complex)

FISH PRESENT: No Yes If Yes, list Species:_____

DISTANCE TO FOREST FROM WATER’S EDGE:_____ m ft

DISTANCE TO NEAREST ROAD:_____ m ft

ROAD IS: PAVED GRAVEL DIRT

ROAD CINDITIONS AT NIGHT: Light Traffic (<10 cars) Heavy Traffic (≥10 cars)

FOR THE FOLLOWING, RANK the amount of pond area in which each type occurs (does not need to sum to 100%): 0 = 0%, 1 = 1-10%, 2 = 11-25%, 3 = 26-50%, 4 = 51-75%, 5 = 76-100%

AQUATIC SUBSTRATE: Leaf Litter_____ Sticks/Logs _____

AQUATIC VEGETATION: SAV _____ Herb _____Emergent _____Cattail _____Shrub _____Tree _____Other _____

LAND USE/COVER AROUND VERNAL POOL:

Estimate % of each of the land use/cover categories with 50 m of pool. Estimates should total 100%:

_____% Woodland/Forest

- ☐ Hardwood (>75% deciduous)
- ☐ Softwood (>75% evergreen)
- ☐ Mixed Hardwood/Softwood (<75% each)

If % woodland/forest is entered, record if canopy cover over the vernal pool is heavy or moderate:

- ☐ Heavy (>50% canopy cover of trees/shrubs >6 ft. tall)
- ☐ Moderate (<50% canopy cover of trees/shrubs < 6ft. tall)

_____% Agriculture/Fields

_____% Meadow/Marsh

_____% Residential/Urban/Suburban

_____% Industrial

_____% Mining

_____% Pasture/Rangeland

_____% Road

_____% Other: _____

NOTES:

FOCAL VERNAL POOL EGG MASS COUNT DATA SHEET

LOCALITY:

VERNAL POOL NAME:

DATE:

TIME BEGIN:

TIME END:

GRID SPACING IS: _____ m
INDICATE NORTH ON MAP

OBSERVER 1

OBSERVER 2

***INDICATE WITH LINE WHEN OBSERVERS SWITCH**

Species	# Egg Masses OBS 1	# Egg Masses OBS 2	Dead	Species	# Egg Masses OBS 1	# Egg Masses OBS 2	Dead

LOCALITY:_____ **VERNAL POOL NAME:**_____
Date:_____ Sky Code:_____ Wind Code:_____ Previous Day Precipitation? □ YES □ NO
Air Temp:_____ Water Temp:_____ □ °C □ °F
Pool Max. Depth: _____ cm Water Level: □ FULL □ ¾ FULL □ ½ FULL □ ¼ FULL □ < ¼ □ DRY
Is Visibility Impaired During Egg Mass Counts? □ YES □ NO

OTHER AMPHIBIANS, REPTILES, INVERTEBRATES, ETC.:

SPECIES	Chorus Cord	# Mated Pairs	Spermatophores	# Egg Masses	Tadpoles/Larvae	# Juveniles	# Adults

NOTES:

CHORUS CODE	DESCRIPTION
0	No amphibians calling
1	Individuals can be counted, calls not overlapping. Record the number of individuals calling after code separated by hyphen (e.g., 1-3)
2	Calls overlap (simultaneous calling), but individual are distinguishable. Record the number of individuals calling after code separated by hyphen (e.g., 2-6)
3	Full chorus, calls continuous and overlapping. Can not distinguish individuals.