
**Sandburg, N.H., "Field Summary of Santa Clara River Surveys for Bufo californicus and Rana aurora draytonii, May 8 through May 29, 2001"
(June 6, 2001)**

Original in Matt Carpenter's
Office

**Field Summary of Santa Clara River Surveys for
Bufo californicus and Rana aurora draytonii,
May 8 through May 29, 2001**

Synopsis

Bufo californicus (arroyo toad) tadpoles were located at three sites on the Santa Clara River on May 25, 01. No adults or larvae of Rana aurora draytonii (California red-legged frog) were located. Additional survey is required to determine presence/absence of red-legged frogs. Current negative impacts to the arroyo toad include off-highway vehicle and special uses permitted within the riverbed and upland terraces, and an unusually heavy algae growth present throughout the survey area which may result from a nutrient influx from upstream uses. Water currently constitutes a limiting factor to the Santa Clara River ecosystem and to arroyo toads. Water extraction from the Santa Clara River will jeopardize the existing population of arroyo toads. Bufo californicus (arroyo toad) is a Federally listed Endangered species, and a California Species of Special Concern.

Introduction

Five amphibian surveys were conducted for the City of Santa Clarita on a section of the upper Santa Clara River extending from the downstream site of the River's End vacation park to the upstream site of the proposed Transit Mix Concrete Company mine (Ben Curtis property). This area (T. 4N, R.14W, Section 16) is located northeast of the City of Santa Clarita, and is accessed by Soledad Canyon Road. Capra Road provides public vehicle access to the River.

Method

Day surveys were conducted on May 8th, May 22nd, May 25th and May 29th for an approximate total of 17 survey hours. Night surveys were conducted on May 8th, May 17th and May 22nd for a total of approximately ten survey hours. Methods of survey were conducted according to Sweet (1991). Surveys originally proposed for night hours were changed to day light hours due to the density of vegetation coupled with low numbers of sightings of adults

amphibians upstream of Capra Road and below the TMC site. Additional factors for this change included an absence of calling males, apparent early breeding season, and the increased probability of trampling newly-metamorphosed juveniles present on the bank. Air and water temperatures, approximate wind speed and weather were recorded for each survey.

Insufficient survey was conducted to document presence or absence of R.a.draytonii (red-legged frogs). Though moderate habitat is present, the number of hours of nighttime survey was not adequate, and occurred outside of the breeding season for California red-legged frogs. Also, due to limited time allotted for survey, searches focused on habitat optimally suited to Bufo californicus (arroyo toads).

Still photographs and videotape were used to visually document riparian habitat of the survey area, and the presence and location of arroyo toad tadpoles. Eminent herpetologist and arroyo toad specialist, Dr. Dan Holland, also verified presence of arroyo toad tadpoles within the survey area.

Results

May 8th - Day survey

Afternoon survey accompanied by Don Williams from the City of Santa Clarita.

Air temperature 93 degrees F.

Water temperature 72-74 degrees F.

Wind speed less than five mph. Clear sky.

Survey began at the River's Edge vacation park and extended upstream to the proposed TMC mining site.

The River's Edge vacation park is developed with concrete roadways and parked trailers under a canopy of large cottonwood adjacent to the Santa Clara River. This area may have previously provided suitable arroyo toad burrowing/feeding habitat, but now incurs substantial disturbance which would significantly impact arroyo toad survival.

The Santa Clara River channel at this location has also been disturbed by previous construction of the concrete railroad base that parallels the River on the South side. The River at this site and continuing up to the railroad bridge just south of Capra Road is of low gradient and slightly entrenched with a maximum water depth ranging from eight inches to two and a half feet in intermittent pools. The River incurs a high width to depth ratio with an

apparently high sediment supply and bed material of coarse sand. Stream banks are primarily composed of unconsolidated, heterogeneous, non-cohesive, alluvial materials of cobble size. The rate of water flow exceeds suitability for arroyo toad clutches with the exception of small side channels, but provides red-legged frogs habitat in this lower survey reach. Dense willow and arundo vegetation line the stream banks that intermittently break open to gravel bars and unvegetated terraces with cottonwood overstory. Stinging nettle is a prevalent understory in the railroad bridge vicinity. The density of vegetation along the more constricted channels in the lower survey section south of the railroad bridge precludes optimal arroyo toad breeding habitat, with the exception of intermittent open alluvial flats.

Tadpoles of Bufo boreas (western toads), Hyla cadaverina (California treefrog), and Pseudacris regilla (Pacific chorus frog) were located in outer channel edges and a few side channels. No arroyo toad or red-legged larvae were located here. Gila orcutti (arroyo chub) and thousands of small Gasterosteus aculeatus williamsoni (unarmored three-spine stickleback) fry were observed, in addition to mallard adults/ducklings and riparian birds (no T&E species heard). Deer and dog/coyote tracks were numerous throughout the drainage.

Upstream of the railroad bridge, in the vicinity of the Capra Road junction, the stream channel widens with flat terraces, cottonwood overstory, extensive alluvial deposits and stream velocities suitable for arroyo toad clutches. Numerous cohorts of western toad larvae were observed in the River directly below Capra road. The size of the older cohorts indicates that breeding began in early March. Killdeer were also present here, and further upstream.

The use of these alluvial flats by off-highway vehicle traffic was evident in the river channel and throughout vegetated areas both downstream and upstream, crossing the River twice in the railway bridge area. Capra road appeared to be the access point for these vehicles. Topographically, this area provides the most suitable arroyo toad habitat within the survey area. OHV vehicle traffic and other special uses, however, permitted by the jurisdictional agency (USFS), imposes a significant limitation to survival of arroyo toads at this site.

Upstream of Capra Road, the river channel narrows against a concrete wall created for support of the railway which now runs on the north side of the River. A small pond, up to 2.5 feet in depth, has been created utilizing an existing natural rock barrier. Numerous western toad, and treefrog tadpoles were observed here. Additional wildlife, mallards, killdeer, and deer/dog/coyote tracks were

observed upstream along intermittent riffle/pool habitat interspersed with alluvial flats and slower channels. A side tributary, referred to as Bear Creek, delineates another large area of optimal arroyo toad habitat with slower water velocities and wide alluvial terraces devoid of dense vegetation.

Intermittent pool/riffle habitat intersperses among slower stream velocity channels upstream of Bear Canyon. Maximum water depth ranged from eight inches to 2.5 feet. Western toad and treefrog tadpoles were located in the slower stream-edge currents, but arroyo toad tadpoles were not identified. A concrete and culvert bridge crosses the River at Ben Curtis' property. Above this point, unusually high densities of B. boreas (western toads) and H. cadaverina (California treefrogs) tadpoles of different age cohorts extended up the river for approximately a quarter mile. Small mats of green algae had begun growing parallel to the banks, and were utilized as cover by the tadpoles. Again, the size of the B. boreas (western toad) tadpoles indicates that breeding probably began in early March. In this precursory visit with a time limitation, the large tadpole groups were not searched for arroyo toad larvae. Stickleback fry were located along the entire length of the survey area up to the end point. The survey concluded at a definitive rock pool of five feet in depth.

May 8th - night survey

The area of survey was shortened to exclude the River south of the railroad bridge crossing below Capra Road junction in order to focus on habitat with stronger characteristics for arroyo toads.

Beginning in the upper section of the survey area, three adult Bufo boreas (western toad), ranging in size from 72 to 86 mm in length were located terrestrially in artificial clearings near the concrete and culvert bridge. One subadult western toad, 56 mm in length, was located on an alluvial gravel deposit along the river upstream of this bridge. Downstream, six adult western toads were located in the vicinity of the Capra Road junction and the rail road bridge. Four western toads were located within the river, and the other two were terrestrial, situated on alluvial gravel. OHVs were observed in the river channel.

May 17th - night survey

Air temperature 68 degrees

Water temperature 70 degrees

Wind speed less than 5 mph, clear sky

Four adult western toads were located in the vicinity of Capra Road and the railroad bridge. One adult western toad was located in the vicinity of the concrete and culvert bridge. One adult western toad was located in the vicinity of Bear Creek Canyon. Algae mats had

grown, occluding much of the surface area of the River particularly in the middle section of the survey area. OHV's were observed in the river, and increased OHV use of the river channel was noted at Capra road vicinity. No B. californicus (arroyo toad) was sighted.

May 22nd - day and night survey (videotaped day survey)

Day air temperature 93 degrees F.

Night air temperature of 75 degree F.

Day water temperature 66 - 68 degrees F.

Night water temperature of 64 degrees.

Wind speed less than 5 mph. Clear sky.

Due to the low number of night sightings of amphibians, and the large area to be searched, day survey hours were included to examine tadpole species. Tadpoles were now covered by unusually large, dense obscuring mats of green algae.

Green algae mats of approximately two feet in width, and one inch in thickness now occluded miles of stream surface area particularly in the middle reaches of the survey area. Some River reaches were completely occluded on the surface while others remained clear of algae only in the stream center and riffle areas where flow velocities were too high to permit algae growth. Such extensive algae growth is unlikely a natural occurrence considering the relatively rapid stream velocities, and low water temperatures. Such growth usually results from an artificial influx of nutrients from an upstream source. Nutrients leached from the soil into the River system could be accelerating algae growth when sufficiently warm temperatures are attained in May. This source may be related to the five large recreation camps, and assorted residences upstream that all use septic systems directly within the drainage. At one point upstream, the River has been dammed into a swimming hole the size of a football field. The manager of the vacation camp informed me that 3,000 recreationists used this over the Memorial Day weekend.

Exotic rorripa and Veronica vegetation had also grown explosively along the banks forming a dense two-foot wide fringe up to two and a half feet in height. Additional exotics include arundo, melilotus and sporadically located tamarisk. Thousands of western toad and California tree frog tadpoles, with lesser numbers of pacific chorus frog tadpoles, were still present upstream situated in concentrated groups, ranging in size from approximately 11 to 45 mm. Numerous individuals were newly metamorphosed, and congregated on the algae mats. The denser groups of these tadpoles were located in the upper reach of the survey area (marked by white flags). Bear Canyon no longer contributed surface flow into the River.

With the River water level dropping, the pools at the Capra road junction had shrunk and surface flow dropped subsurface for a distance of several hundred yards. Only a few western toad and California tadpoles remained. The pool upstream was devoid of tadpoles, and was pungent from anaerobic soil due to decreased flow and a large algae mat. Increased use of the stream channel by OHVs was evident, and OHVs were present in the river bed. Night survey located only three western toads in the Capra Road vicinity.

May 25th day survey - videotaped

Air temperature 88 degree F.

Water temperature 72 - 84 degrees F.

Algae mats were yellowing and clumping throughout the reach of the survey. These mats collapsed flat or clumped on the bottom surface of the streambed, and served as a considerable evaporator in the function of a sponge. Completely dry, they form tough impenetrable mats, and would inhibit the movement and/or survival of tadpoles trapped underneath. This would constitute a particular concern with lower water levels. Interestingly enough, Bear Canyon again supported surface flow.

The water level was lower and surface flow was much reduced at Capra Road junction (video visuals). Shauna Bautista, USFS biologist, later mentioned that remaining stickleback were removed from disappearing pools. No tadpoles were located in the remaining stream channel up to the pool site, and increased OHV traffic driving through this channel was evident. OHVs were again sighted in the stream channel.

Specific areas were identified for focused searches. Increased assertiveness in manipulating algae mats exposed larger numbers of tadpoles for examination. Three groups of Bufo californicus (arroyo toad) tadpoles were located with a combined total of approximately 75 individuals. Between these three groups, at least three cohorts were identified by size with age estimates ranging from 25 days to 67 days based on Sweet's classification (Sweet 1991). Exact tadpole locations are not described in this document. Water temperatures at two sites registered above the River average at 74 and 84 degrees F., and two groups were located on a sand substrate clear of algae mats. The third group was located above algae mats, and among subsurface algae. All arroyo toad tadpole groups were located directly downstream of riffle flow, with continuous surface flow still present through pools. A few additional clutches could possibly lay undiscovered under the thick algae mats, though these appear to be inhibiting and preferred by B. boreas (western toad).

Thamnophis hammondi (two-striped garter snake), a predator of arroyo toad adults and larvae was observed among one group of arroyo toad larvae. Water depth at this same site is particularly limited, and may not be able to sustain younger tadpoles till metamorphosis. A decrease in pool size resulting from reduction of surface flow will increase predator effectiveness on arroyo toad larvae by snakes, birds and invertebrates.

May 29th day survey (videotaped)

Air temperature 92 degrees

Water temperature 64 - 68 degrees

Wind speed less than 5 mph, clear sky

The area surveyed extended from River's Edge vacation park to Capra Road junction. At the Capra road junction, a sizable film set was under construction, permitted by the USFS. Heavy equipment was present, including a backhoe used to build up berms and dig a large hole within the channel. No surface water remained at the production site. No government employees were present to monitor equipment and construction within the channel. A USFS patrolman visited briefly, but was not knowledgeable about the special use permit. There is a concern that any remaining arroyo toads may incur mortality or negative impacts from ground disturbance, hydraulic leaks, gasoline/oil spills, foot traffic, exotic plant introduction, or toxic chemicals resulting from special effect efforts.

No additional arroyo toad tadpoles were located. Prolific numbers of stickleback fry were present throughout this reach, but western toad and tree frog tadpoles were infrequent and grouped only in side channels towards the lower end of the survey area. Stream bank vegetation of arundo and willow had increased in density and canopy cover along the banks, assisting in maintenance of low stream temperatures. A few pools up to two feet in depth were still present, but isolated pools with stickleback and tadpoles will disappear in the near future.

Issues and Concerns

1. Potential Water extraction and mining activities by the TMC mine.

As previously discussed, current water levels are a limiting factor to aquatic dependent organisms within the Santa Clara River. Annual fluctuations in precipitation/surface flow may preclude breeding activities of Bufo californicus (arroyo toad) at a few, or potentially all sites within the survey area.

Despite considerable habitat present for arroyo toads, numbers are relatively low, most likely attributable to previous construction activities for the railway, upstream sand/gravel mining, and current uses permitted within the channel at Capra Drive. Arroyo toad habitat has been compromised to the degree that additional impacts resulting from the TMC mine will negatively and significantly effect the remaining population. Additional water extraction proposed by the TMC mine in the draft DEIR will reduce surface water further, exacerbating current limiting factors to the degree that Take will occur on arroyo toad larvae, and jeopardize the existing population. Water is the single most limiting and potentially impacting factor related to the existence of this arroyo toad population. Reduced water levels cannot be mitigated in this situation. Reduction of surface water area and mining activities will cause the following significant effects:

- a. Mortality on larvae due to early loss of water before metamorphosis.
- b. Loss of young metamorphosed toads due to extraction of water required for hydration.
- c. Cessation of breeding due to lack of water and sufficient breeding habitat.
- d. Mortality due to increased facilitation of predatory activities upon larvae and adults in limited surface water.
- e. Increased coverage by algae mats that are not conducive to breeding or survival of larvae and newly-metamorphosed toads.
- f. Increase of silt from terrestrial and airborne sources into the water system, and leaching of additional soil nutrients into surface water compounding algae problem.
- g. Potential of toxic spills and leakage into the water system from hydraulic systems, equipment and vehicles.
- h. Lack of daily monitoring by objective and competent specialists to identify current and future problems impacting the ecosystem and native amphibians. Lack of process to remedy existing and future problems.
- i. Declining water levels present in the Santa Clara already impact stickleback as mentioned earlier. Lower water levels could impact the breeding and survival of any California red-legged frogs present.

2. Off-highway vehicle and special use permits at Capra Drive.

OHV traffic causes direct mortality on western and arroyo toads by crushing the amphibians within burrows, and running over newly-metamorphosed individuals that mature on the bank edge. Egg clutches and tadpoles incur similar mortality when vehicles drive through stream edges. As previously mentioned, this topographical

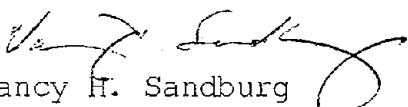
area is optimally suited for arroyo toads, and is suitable for breeding when water remains longer into the season. Western toad adults and larvae have without doubt incurred mortality with OHV traffic and film production activities currently permitted. Any arroyo toads within the vicinity will have incurred similar impacts. Film production activities, permitted by the USFS, should not occur in this vicinity; current heavy equipment and pedestrian traffic, and ground disturbance currently permitted without the presence of a monitor may have caused arroyo toad Take. The area can be easily barricaded to OHV trespass.

3. Algae mats resulting from upstream nutrient flush.

Water testing is recommended during spring months to document what appears to be a heavy nutrient load contributing to heavy algae growth that is not conducive to arroyo toad breeding and survival. A potential source for the nutrient load may be the numerous septic systems adjacent to the river channel. Arroyo toads prefer to breed on clear sand and gravel surfaces without interference of vegetation. Algae mats can entrap arroyo toad tadpoles and newly-metamorphosed juveniles as water levels drop. They also form a barrier between the water edge and the bank, and expose vulnerable, newly-metamorphosed juveniles that survive by cryptic coloration to predators. In low water situations, invertebrate feeders on algae can reduce water oxygen levels, and create mucilaganeous deposits inhibitory to arroyo toad breeding.

4. Additional note

Potential arroyo toad habitat is present upstream of the TMC site.


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Date

Literature Cited

Sweet, Samuel S. 1991. Initial Report on the Ecology and Status of the Arroyo Toad (Bufo microscaphus californicus) on the Los Padres National Forest of Southern California with Management Recommendations. Contract Report USDA, Forest Service, Los Padres National Forest, Goleta, Calif. 198 pp