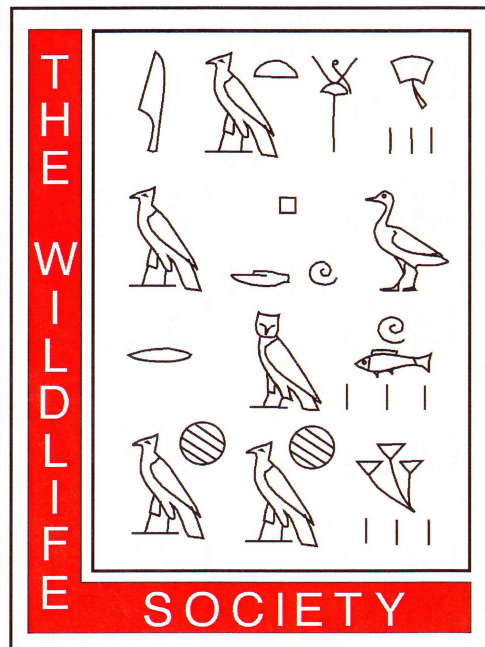


2005 Annual Conference

The Western Section of The Wildlife Society

Plenary Theme:

*Modern Versions of Classic Tools
for Wildlife Biologists*



Program and Abstracts

January 19–21, 2005
Doubletree Hotel
Sacramento, California

mosaics of aerial photographs with color/tone matched edges and point files from field notes. Thus disparate pieces of information may be integrated for increased environmental understanding.

We compiled a digital, semi-controlled, air photo mosaic from 1941 aerial photographs of the Eagle Lake Ranger District, Lassen National Forest and a digital USGS Ortho-photo Quarter Quad mosaic of the same area from ortho-photographs taken during the late 1980s to early 1990s time frame. These mosaics were interpreted within a 100-meter wide buffer around section lines that have been annotated from 1871/1883 surveyors notes. Vector overlays of vegetation cover-type were created for these buffered areas for the 1941 photo mosaic and for the 1990s ortho-photo mosaic. We also produced a digital vector overlay of section lines with attributes describing soil condition and vegetation cover from land survey notes collected between 1871 and 1883. Surveyors notes on bearing trees for corners were also included in the database.

The interactive and comparative display of these multi-temporal data sets in a GIS environment facilitates an understanding of habitat dynamics over time, especially highlighting changes in forest canopy cover on these landscapes.

Session: Poster (Thurs 5:30 To 7:00 P.M.)

ASSESSMENT OF THE MODERATION OF STRESS-CAUSING ENVIRONMENTAL FACTORS IN AN IMPROVED NEST BOX TRAP DESIGN FOR

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The need for a trapping method that minimizes the negative effects on a captured animal is an important concern with current public policy and approval of animal care institutions. Many recent studies have attempted to determine the various physiological and pathological responses that captured animals have towards different trap types, including padded and unpadded leg hold traps, and box traps. Even box traps can be stressful to a captured individual since captured animals are subject to the environmental influences of its surroundings. We tested the efficacy of an improved nest-box design to minimize environmental stressors to a captured animal as compared to a box trap with no nest-box. Differences between minimum and maximum temperature, relative humidity, and light intensity were all greater in the trap than in our nest-box ($P < 0.05$). The standard deviation and average slope of the regression line of these parameters, as indices of average flux and how quickly they changed over time, respectively, were greater in the trap than in the nest-box ($P < 0.05$). Our nest-box provided significant protection from the environmental elements that was absent in the trap alone, and provided a more stable setting considering the fluctuating external environmental factors.

Session: Amphibians and Reptiles (Wednesday 1:30 To 5:30 P.M.)

COMPLEMENTARY RESOURCE USE AND MIGRATION POTENTIAL OF THE
CASCADES FROG (*RANA CASCADEAE*): A CASE STUDY IN THE TRINITY ALPS
WILDERNESS, CALIFORNIA.

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Rapid frogs of western North America are among the most seriously impacted of all amphibian species. In light of investigations documenting rapid declines of Cascades frogs (*Rana cascadae*), renewed attention has been placed on their conservation. *Rana cascadae* require at least three major complementary resources for annual activities: reproduction, foraging, and hibernation. As with many high elevation temperate anurans, *R. cascadae* are subjected to move seasonally because some or all of these resources are spatially separated, requiring migrations among habitat patches. In a high-elevation (2200m) basin within the Trinity Alps Wilderness, California, we used radio transmitters, PIT tags, and visual implant elastomer to characterize movements among and within habitat patches for all post-metamorphic life stages. Movements were documented across the entire activity period (June-October) for two years. We conducted 21 basin wide mark-recapture censuses which resulted in 970 individual radio telemetry locations for 50 adults and 3727 locations for post-metamorphic frogs. We found that they are more narrowly distributed in the spring and fall than in the summer. Migrations occurred quickly between habitat patches and were not limited to aquatic corridors. Frogs occupied an array of aquatic habitats, but appeared to be selecting different types based on seasonal life history requirements.

Session: GIS and Remote Sensing (Thursday 1:30 To 4:20 P.M.)

BIOGEOGRAPHIC INFORMATION OBSERVATION SYSTEM, A MODEL FOR
PRESENTING BIOLOGICAL SPATIAL DATA ONLINE

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Developed by the California Department of Fish and Game, the Biogeographic Information and Observation System, (BIOS) database design creates an overarching framework that organizes, and to a certain degree standardizes, key components of biogeographic databases in use by the Department and its cooperators. This structure allows for the efficient management of these crucial data sets, and makes possible the development and maintenance of consistent applications and analytical tools.

In the collection and warehousing of datasets, BIOS adheres to the premise that complete uniformity among all biological databases is unattainable (and undesirable). BIOS

Session: Amphibians and Reptiles (Wednesday 1:30 To 5:30 P.M.)

THE RELATIONSHIP OF COLD-WATER TRIBUTARIES TO LANDSCAPE-SCALE ATTRIBUTES IN A NORTHERN CALIFORNIA WATERSHED: IMPLICATIONS FOR THE CONSERVATION OF COLD-WATER ADAPTED AMPHIBIANS AND

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We examined relationships between stream temperatures and environmental attributes including forest cover, in the Mattole watershed of northwestern California. We characterized temperature regimes of 40 tributaries by determining the highest maximum weekly maximum temperature (MWMT) using measurements recorded hourly throughout the summer. Multi-year sampling established a link between cold-water tributaries (MWMT <18 °C) and the presence of coho salmon and two headwater amphibians, the tailed frog and southern torrent salamander. Stream temperature was the best predictor of the presence of these cold-water species. However, the best predictor of stream temperature regimes was a landscape-scale model consisting of three variables: aspect catchment area, and proportion of non-forested habitat ($R^2 = 0.69$). Temperature regimes in the warmest tributaries containing these species, combined with historic and current watershed conditions which affect stream temperatures, suggest that strategies to restore and conserve cold-water species in this and similar watersheds, should focus on stream temperature. According to our model, the best variable available to effect a particular water temperature regime is the amount of intact forest cover. For example, if the objective is to provide summer stream temperatures suitable for coho salmon in a north-facing basin of 400 ha, forest cover should be maintained at >85%.

Session: Poster (Thurs 5:30 To 7:00 P.M.)

USE OF REMOTE DIGITAL CAMERAS AS A MONITORING TECHNIQUE:
INVESTIGATING THE ECONOMIC FEASIBILITY AND QUALITY OF THE

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The use of remote cameras for various monitoring and research projects is common within the wildlife field for presence/absence, abundance, or density estimation projects. With today's budget constraints, the placement of cameras in multiple locations can be limited. We previously introduced a low-cost remote 35mm camera that costs under 70 USD which opened up monitoring possibilities for larger-scale, budget-limited projects. However certain constraints are inherent with the use of 35mm cameras, including the cost of film and development, and failure to capture target subjects due to insufficient available exposures. The recent availability of remote digital cameras on the market has triggered a drop in their prices (270 USD) well below the standard cost for many types of 35mm remote cameras. However, most remote digital cameras allow the researcher to view download, and remove data in the form of pictures on a rugged storage media. The large storage capacity of most digital cameras (~700 pictures) and the easily transferable picture format (JPEG, BMP) can save labor hours and a considerable amount of money for researchers. We investigate the potential uses, economic feasibility, and quality/ cost comparison of one line of digital cameras with their 35mm counterpart.

Session: Amphibians and Reptiles (Wednesday 1:30 To 5:30 P.M.)

REPRODUCTIVE ECOLOGY AND BEHAVIOR OF THE FOOTHILL
YELLOW-LEGGED FROG (*RANA BOYLI*)

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Due to recent declines across its historic range, the foothill yellow-legged frog (*Rana boylei*) is currently the subject of a number of ongoing research projects. However, aspects of the species natural history are still largely unknown. The purpose of our study was to obtain information about the species reproductive ecology and mating strategy by studying a breeding population in a natural stream system. We monitored breeding activity for three seasons and collected data to determine timing of peak breeding activity, oviposition site selection, daily and seasonal sex ratios, site fidelity, male arrival date and tenure, female