

**APPENDIX A**

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**Guidelines Compliance Checklist**

**Appendix A—GUIDELINE COMPLIANCE CHECKLIST**

	<b>PAGE</b>	<b>PREPARER'S INITIALS</b>
Setting	<u>11</u>	<u>JP</u>
Original topographical quad sheet (or color photocopy)	<u>13</u>	<u>JP</u>
Project site photographs or color photocopies	<u>F-1</u>	<u>JP</u>
Color aerial photographs	<u>18, 26, 35</u>	<u>JP</u>
SEA/SERA map	<u>14</u>	<u>JP</u>
Biotic survey of the project site	<u>16</u>	<u>JP</u>
Floral and faunal lists in systematic/alphabetic order	<u>C-1, C-7</u>	<u>JP</u>
Table of sensitive species impacts matrix	<u>B-1</u>	<u>JP</u>
Document showing CNDDDB contact	<u>E-1</u>	<u>JP</u>
Site/grading plans	<u>5</u>	<u>JP</u>
Initial study questionnaire	<u>NA*</u>	<u>JP</u>
Impacts	<u>39</u>	<u>JP</u>
Mitigation measures	<u>39</u>	<u>JP</u>
Mitigation monitoring	<u>39</u>	<u>JP</u>
Preparer's resume/qualifications	<u>G-1</u>	<u>JP</u>

\* NA = Not Available

**APPENDIX B**

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**Sensitive Species Impacts Matrix**

**Appendix B – Sensitive Species Impacts Matrix**

<b>Species</b> <i>Scientific Name</i> <b>Common Name</b>	<b>Monarch butterfly</b> <i>Danaus plexippus</i>	<b>Comstock's blue</b> <i>Euphilotes battoides comstocki</i>	<b>Green blue</b> <i>Icaricia lupini chlorina</i>
<b>Habitat present and species is reasonably expected to occur on site? (Yes/No)</b>	No (i.e., roosting habitat)	No	Yes
<b>Species impacted directly by habitat loss? (Yes/No)</b>	No	No	Yes
<b>Habitat loss substantial? (Yes/No)</b>	No	No	No
<b>Species impacted directly on adjacent lands by edge effects? (Yes/No)</b>	No	No	No
<b>Potential to eliminate species on site? (Yes/No)</b>	No	No	No
<b>Potential to reduce population size below self-sustaining levels? (Yes/No)</b>	No	No	No
<b>Potential for substantial reduction in numbers of individuals? (Yes/No)</b>	No	No	No
<b>Potential restriction of range of rare or endangered species? (Yes/No)</b>	No	No	No
<b>Impacts significant? (Yes/No)</b>	No	No	No
<b>Mitigation</b>	No	No	No

<b>Species</b> <i>Scientific Name</i> <b>Common Name</b>	<b>Veined blue</b> <i>Icaricia neurona</i>	<b>Bright blue copper</b> <i>Lycaena heteronea clara</i>	<b>San Emigdio blue butterfly</b> <i>Plebulina emigdionis</i>
Habitat present and species is reasonably expected to occur on site? (Yes/No)	No	Yes	No
Species impacted directly by habitat loss? (Yes/No)	No	Yes	No
Habitat loss substantial? (Yes/No)	No	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	No	No	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	No	No	No
Mitigation	No	No	No

<b>Species</b> <i>Scientific Name</i> <b>Common Name</b>	<b>Unsilvered fritillary butterfly</b> <i>Speyeria adiastra atossa</i>	<b>Tehachapi Mountain silverspot butterfly</b> <i>Speyeria egleis tehachapina</i>	<b>Tehachapi slender salamander</b> <i>Batrachoseps stebbinsi</i>
Habitat present and species is reasonably expected to occur on site? (Yes/No)	No	No	No
Species impacted directly by habitat loss? (Yes/No)	No	No	No
Habitat loss substantial? (Yes/No)	No	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	No	No	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	No	No	No
Mitigation	No	No	No

<b>Species</b> <i>Scientific Name</i> <b>Common Name</b>	<b>Arroyo toad</b> <i>Bufo californicus</i>	<b>Yellow-blotched salamander</b> <i>Ensatina eschscholtzii croceator</i>	<b>California red-legged frog</b> <i>Rana aurora draytonii</i>
Habitat present and species is reasonably expected to occur on site? (Yes/No)	No	Yes	No
Species impacted directly by habitat loss? (Yes/No)	No	Yes	No
Habitat loss substantial? (Yes/No)	No	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	No	No	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	No	No	No
Mitigation	No	No	No

<b>Species</b> <i>Scientific Name</i> <b>Common Name</b>	<b>Foothill yellow-legged frog</b> <i>Rana boylei</i>	<b>Mountain yellow-legged frog</b> <i>Rana muscosa</i>	<b>Western spadefoot</b> <i>Spea hammondi</i>
Habitat present and species is reasonably expected to occur on site? (Yes/No)	No	No	No
Species impacted directly by habitat loss? (Yes/No)	No	No	No
Habitat loss substantial? (Yes/No)	No	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	No	No	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	No	No	No
Mitigation	No	No	No

<b>Species Common Name Scientific Name</b>	<b>Silvery legless lizard <i>Anniella pulchra pulchra</i></b>	<b>Southwestern pond turtle <i>Clemmys marmorata pallida</i></b>	<b>Coast horned lizard <i>Phrynosoma coronatum</i></b>
Habitat present and species is reasonably expected to occur on site? (Yes/No)	Yes	No	Yes
Species impacted directly by habitat loss? (Yes/No)	Yes	No	Yes
Habitat loss substantial? (Yes/No)	No	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	No	No	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	Yes	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	No	No
Mitigation	Yes	No	No

<b>Species Common Name Scientific Name</b>	<b>Two-striped garter snake <i>Thamnophis hammondi</i></b>	<b>Cooper's hawk <i>Accipiter cooperii</i></b>	<b>Sharp-shinned hawk <i>Accipiter striatus</i></b>
Habitat present and species is reasonably expected to occur on site? (Yes/No)	Yes	Yes	No (i.e, nesting habitat)
Species impacted directly by habitat loss? (Yes/No)	No	No	No
Habitat loss substantial? (Yes/No)	No	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	No	Yes (i.e., construction noise)	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	No	Yes	No
Mitigation	No	Yes	No

<b>Species Common Name Scientific Name</b>	<b>Tricolored blackbird <i>Agelaius tricolor</i></b>	<b>Long-eared owl <i>Asio otus</i></b>	<b>Burrowing owl <i>Athene cunicularia</i></b>
Habitat present and species is reasonably expected to occur on site? (Yes/No)	Yes	Yes	No
Species impacted directly by habitat loss? (Yes/No)	No	No	No
Habitat loss substantial? (Yes/No)	No	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	Yes (i.e., construction noise)	Yes (i.e., construction noise)	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	Yes	No
Mitigation	Yes	Yes	No

<b>Species Common Name Scientific Name</b>	<b>Golden eagle <i>Aquila chrysaetos</i></b>	<b>Lawrence's goldfinch <i>Carduelis lawrencei</i></b>	<b>Northern harrier <i>Circus cyaneus</i></b>
Habitat present and species is reasonably expected to occur on site? (Yes/No)	No	Yes	Yes
Species impacted directly by habitat loss? (Yes/No)	No	Yes	Yes
Habitat loss substantial? (Yes/No)	No	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	No	Yes (i.e., construction noise)	Yes (i.e., construction noise)
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	No	Yes	Yes
Mitigation	No	Yes	Yes

<b>Species Common Name Scientific Name</b>	<b>Yellow warbler <i>Dendroica petechia</i></b>	<b>White-tailed kite <i>Elanus leucurus</i></b>	<b>Southwestern willow flycatcher <i>Empidonax traillii extimus</i></b>
Habitat present and species is reasonably expected to occur on site? (Yes/No)	Yes	Yes	Yes
Species impacted directly by habitat loss? (Yes/No)	No	Yes	No
Habitat loss substantial? (Yes/No)	No	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	Yes (i.e., construction noise)	Yes (i.e., construction noise)	Yes (i.e., construction noise)
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	Yes	Yes
Mitigation	Yes	Yes	Yes

<b>Species Common Name Scientific Name</b>	<b>California horned lark <i>Eremophila alpestris actia</i></b>	<b>Prairie falcon <i>Falco mexicanus</i></b>	<b>California condor <i>Gymnogyps californianus</i></b>
Habitat present and species is reasonably expected to occur on site? (Yes/No)	Yes	No	No
Species impacted directly by habitat loss? (Yes/No)	Yes	No	No
Habitat loss substantial? (Yes/No)	No	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	Yes (i.e., construction noise)	No	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	No	No
Mitigation	Yes	No	No

<b>Species Common Name Scientific Name</b>	<b>Bald eagle <i>Haliaeetus leucocephalus</i></b>	<b>Loggerhead shrike <i>Lanius ludovicianus</i></b>	<b>Purple martin <i>Progne subis</i></b>
Habitat present and species is reasonably expected to occur on site? (Yes/No)	No	Yes	No
Species impacted directly by habitat loss? (Yes/No)	No	Yes	No
Habitat loss substantial? (Yes/No)	No	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	No	Yes (i.e., construction noise)	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	No	Yes	No
Mitigation	No	Yes	No

<b>Species Common Name Scientific Name</b>	<b>Least Bell's vireo <i>Vireo bellii pusillus</i></b>	<b>Pallid bat <i>Antrozous pallidus</i></b>	<b>Tehachapi pocket mouse <i>Perognathus alticolus inexpectatus</i></b>
Habitat present and species is reasonably expected to occur on site? (Yes/No)	Yes	No (i.e., roosting habitat)	No
Species impacted directly by habitat loss? (Yes/No)	No	No	No
Habitat loss substantial? (Yes/No)	No	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	Yes (i.e., construction noise)	No	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	No	No
Mitigation	Yes	No	No

<b>Species</b>	
<b>Common Name</b>	<b>American badger</b>
<b>Scientific Name</b>	<b><i>Taxidea taxus</i></b>
<b>Habitat present and species is reasonably expected to occur on site? (Yes/No)</b>	No
<b>Species impacted directly by habitat loss? (Yes/No)</b>	No
<b>Habitat loss substantial? (Yes/No)</b>	No
<b>Species impacted directly on adjacent lands by edge effects? (Yes/No)</b>	No
<b>Potential to eliminate species on site? (Yes/No)</b>	No
<b>Potential to reduce population size below self-sustaining levels? (Yes/No)</b>	No
<b>Potential for substantial reduction in numbers of individuals? (Yes/No)</b>	No
<b>Potential restriction of range of rare or endangered species? (Yes/No)</b>	No
<b>Impacts significant? (Yes/No)</b>	No
<b>Mitigation</b>	No

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**APPENDIX C**  
**Flora and Fauna Lists**

## Appendix C – Fauna and Flora

### I. Relative Abundance of Wildlife Observed or Potentially Occurring on the Site

The expected relative abundance of each species observed or expected to occur on the site is evaluated below. Given the relatively small size of the site and the extent that the on-site habitats intergrade, no attempt has been made to evaluate expected abundance by habitat type.

This evaluation is based on habitat association and current range maps in *Mammals of California* (Jameson and Peters, 2004), *Field Guide to the Birds of North America* (National Geographic, 2003), the *Distribution of the Birds of California* (Grinnell and Miller, 1944), and *Western Reptiles and Amphibians* (Peterson Field Guides, 2003). Although the range maps in these publications are intended to be accurate, they are approximations based on known occurrences and that geographic distributions change.

\*Species observed on the site are indicated in **boldface** in the relative abundance column.

#### Abundance Codes:

A = Abundant

C = Common

U = Uncommon

R = Rare/Not Expected

#### Seasonal Occurrence (For Birds Only):

R = Year-long resident

S = Spring/Summer resident

W = Winter resident

M = Migrant

Scientific Name	Common Name	Relative Abundance
<b>Insecta</b>	<b>Insects</b>	
<b>Lycaenidae</b>	<b>Harvesters, Coppers, Hairstreaks</b>	
<i>Lycaena heteronea clara</i>	Bright blue copper	U
<i>Icaricia lupini chlorina</i>	Green blue	U
<b>Amphibia</b>	<b>Amphibians</b>	
<b>Bufonidae</b>	<b>True Toads</b>	
<i>Bufo boreas</i>	Western toad	C
<b>Hylidae</b>	<b>Tree Frogs</b>	
<i>Pseudacris regilla</i>	Pacific treefrog	<b>A</b>
<b>Plethodontidae</b>	<b>Lungless salamanders</b>	
<i>Ensatina eschscholtzii</i>	Yellow-blotched salamander	U
<b>Reptilia</b>	<b>Reptiles</b>	
<b>Anguillidae</b>	<b>Alligator Lizards</b>	
<i>Elgaria multicarinata webbi</i>	Southern alligator lizard	C
<b>Scincidae</b>	<b>Skinks</b>	
<i>Eumeces skiltonianus skiltonianus</i>	Western skink	U
<i>Eumeces gilberti rubricaudatus</i>	Gilbert skink	R
<b>Phrynosomatidae</b>	<b>Spiny Lizards</b>	
<i>Phrynosoma coronatum frontale</i>	Coast horned lizard	R
<i>Sceloporus occidentalis longipes</i>	Great Basin fence lizard	<b>A</b>
<i>Uta stansburiana hesperis</i>	Side-blotched lizard	<b>A</b>
<b>Anniellidae</b>	<b>Legless Lizards</b>	
<i>Anniella pulchra pulchra</i>	Silvery legless lizard	U
<b>Leptotyphlopidae</b>	<b>Blind Snakes</b>	
<i>Leptotyphlops humilis humilis</i>	Western blind snake	U
<b>Colubridae</b>	<b>Colubrids</b>	
<i>Diadophis punctatus modestus</i>	San Bernardino ringneck snake	U
<i>Diadophis punctatus vandenburghi</i>	Western ringneck snake	C
<i>Masticophis flagellum piceus</i>	Red coachwhip	C
<i>Masticophis lateralis lateralis</i>	Striped racer	U
<i>Coluber constrictor mormon</i>	Western racer	U
<i>Salvadora hexalepis virgultea</i>	Western patch-nosed snake	U
<i>Thamnophis hammondi</i>	Two-striped garter snake	U
<i>Arizona elegans occidentalis</i>	Glossy snake	U

Scientific Name	Common Name	Relative Abundance
<i>Pituophis catenifer deserticolor</i>	Gopher snake	C
<i>Lampropeltis getulus californiae</i>	Common kingsnake	C
<i>Rhinocheilus lecontei lecontei</i>	Long-nosed snake	U
<i>Tantilla planiceps eiseni</i>	California black-headed snake	U
<i>Hypsiglena torquata vandenburghi</i>	Night snake	U
<b>Teiidae</b>	<b>Whiptails and Their Allies</b>	
<i>Cnemidophorus tigris tigris</i>	Western whiptail	C
<b>Viperidae</b>	<b>Vipers</b>	
<i>Crotalus oreganus</i>	Western rattlesnake	C
<b>Aves</b>	<b>Birds</b>	
<b>Odontophoridae</b>	<b>New World Quail</b>	
<i>Callipepla californica</i>	California quail	A (R)
<b>Ardeidae</b>	<b>Herons, Egrets, and Bitterns</b>	
<i>Ardea alba</i>	Great egret	U (W)
<i>Ardea herodias</i>	Great blue heron	U (R)
<i>Egretta thula</i>	Snowy egret	U (W)
<i>Butorides virescens</i>	Green heron	U (R)
<i>Nycticorax nycticorax</i>	Black-crowned night-heron	U (R)
<b>Cathartidae</b>	<b>American Vultures</b>	
<i>Cathartes aura</i>	Turkey vulture	C (R)
<b>Falconidae</b>	<b>Falcons and Caracaras</b>	
<i>Falco sparverius</i>	American kestrel	C (R)
<i>Falco columbarius</i>	Merlin	U (W)
<b>Accipitridae</b>	<b>Hawks, Kites, and Eagles</b>	
<i>Buteo lineatus</i>	Red-shouldered hawk	C (R)
<i>Buteo jamaicensis</i>	Red-tailed hawk	A (R)
<i>Buteo swainsoni</i>	Swainsons hawk	R (M)
<i>Buteo regalis</i>	Ferruginous hawk	U (W)
<i>Buteo lagopus</i>	Rough-legged hawk	U (W)
<i>Accipiter cooperii</i>	Cooper's hawk	U (R)
<i>Accipiter striatus</i>	Sharp-shinned hawk	U (W)
<i>Circus cyaneus</i>	Northern harrier	U (R)
<i>Elanus leucurus</i>	White-tailed kite	U (R)
<b>Tytonidae and Strigidae</b>	<b>Owls</b>	
<i>Tyto alba</i>	Barn owl	C (R)
<i>Asio flammeus</i>	Short-eared owl	U (W)
<i>Asio otus</i>	Long eared owl	U (R)
<i>Bubo virginianus</i>	Great horned owl	C (R)
<i>Otus kennicottii</i>	Western screech owl	C (R)
<i>Aegolius acadicus</i>	Northern saw-whet owl	U (R)
<b>Charadriidae</b>	<b>Plovers</b>	
<i>Charadrius vociferus</i>	Killdeer	C (R)
<b>Columbidae</b>	<b>Pigeons and Doves</b>	
<i>Columba fasciata</i>	Band-tailed pigeon	C (R)
<i>Zenaidura macroura</i>	Mourning dove	A (R)
<i>Columbina passerina</i>	Common-ground dove	C (R)
<b>Cuculidae</b>	<b>Cuckoos and Anis</b>	
<i>Geococcyx californianus</i>	Greater roadrunner	U (R)
<b>Caprimulgidae</b>	<b>Nightjars</b>	
<i>Chordeiles acutipennis</i>	Lesser nighthawk	C (S)
<i>Phalaenoptilus nuttallii</i>	Common poorwill	C (R)
<b>Apodidae</b>	<b>Swifts</b>	
<i>Aeronautes saxatalis</i>	White-throated swift	C (R)
<b>Trochilidae</b>	<b>Hummingbirds</b>	
<i>Archilochus alexandri</i>	Black-chinned hummingbird	C (S)
<i>Calypte costae</i>	Costa's hummingbird	C (S)
<i>Calypte anna</i>	Anna's hummingbird	C (R)
<i>Selasphorus rufus</i>	Rufous hummingbird	U (W)
<i>Selasphorus sasin</i>	Allen's hummingbird	U (S)

Scientific Name	Common Name	Relative Abundance
<b>Picidae</b>	<b>Woodpeckers</b>	
<i>Melanerpes lewis</i>	Lewis' woodpecker	U (W)
<i>Melanerpes formicivorus</i>	Acorn woodpecker	<b>A (R)</b>
<i>Sphyrapicus ruber</i>	Red-breasted sapsucker	U (R)
<i>Sphyrapicus thyroideus</i>	Williamson's sapsucker	U (W)
<i>Picoides pubescens</i>	Downy woodpecker	<b>C (R)</b>
<i>Picoides villosus</i>	Hairy woodpecker	C (R)
<i>Picoides albolarvatus</i>	White-headed woodpecker	U (R)
<i>Picoides nuttallii</i>	Nuttall's woodpecker	<b>C (R)</b>
<i>Colaptes auratus</i>	Northern flicker	<b>C (R)</b>
<b>Tyrannidae</b>	<b>Tyrant Flycatchers</b>	
<i>Contopus cooperi</i>	Olive-sided flycatcher	U (S)
<i>Contopus sordidulus</i>	Western wood-pewee	C (S)
<i>Empidonax hammondii</i>	Hammond's flycatcher	U (M)
<i>Empidonax traillii</i>	Willow flycatcher	<b>R (M)</b>
<i>Empidonax difficilis</i>	Pacific-slope flycatcher	U (S)
<i>Empidonax oberholseri</i>	Dusky flycatcher	U (S)
<i>Sayornis nigricans</i>	Black phoebe	<b>C (R)</b>
<i>Sayornis saya</i>	Say's phoebe	U (R)
<i>Myiarchus cinerascens</i>	Ash-throated flycatcher	<b>C (S)</b>
<i>Tyrannus verticalis</i>	Western kingbird	<b>C (S)</b>
<i>Tyrannus vociferans</i>	Cassin's kingbird	U (S)
<b>Laniidae</b>	<b>Shrikes</b>	
<i>Lanius ludovicianus</i>	Loggerhead shrike	U (R)
<b>Vireonidae</b>	<b>Vireos</b>	
<i>Vireo huttoni</i>	Hutton's vireo	C (R)
<i>Vireo cassinii</i>	Cassin's vireo	U (S)
<i>Vireo gilvus</i>	Warbling vireo	<b>C (S)</b>
<i>Vireo bellii pusillus</i>	Least Bell's vireo	U (S)
<b>Corvidae</b>	<b>Jays, Magpies, and Crows</b>	
<i>Aphelocoma californica</i>	Western scrub-jay	<b>A (R)</b>
<i>Cyanocitta stelleri</i>	Steller's jay	<b>C (R)</b>
<i>Nucifraga columbiana</i>	Clark's nutcracker	C (R)
<i>Corvus brachyrhynchos</i>	American crow	<b>A (R)</b>
<i>Corvus corax</i>	Common raven	<b>A (R)</b>
<b>Alaudidae</b>	<b>Larks</b>	
<i>Eremophila alpestris</i>	Horned lark	<b>A (R)</b>
<b>Hirundinidae</b>	<b>Swallows</b>	
<i>Tachycineta bicolor</i>	Tree swallow	C (R)
<i>Tachycineta thalassina</i>	Violet-green swallow	C (R)
<i>Stelgidopteryx serripennis</i>	Northern rough-winged swallow	C (S)
<i>Petrochelidon pyrrhonota</i>	Cliff swallow	C (S)
<i>Hirundo rustica</i>	Barn swallow	C (S)
<b>Timaliidae</b>	<b>Babblers</b>	
<i>Chamaea fasciata</i>	Wrentit	<b>C (R)</b>
<b>Paridae</b>	<b>Chickadees and Titmice</b>	
<i>Baeolophus inornatus</i>	Oak titmouse	<b>C (R)</b>
<i>Poecile gambeli</i>	Mountain chickadee	U (W)
<b>Aegithalidae</b>	<b>Bushtits</b>	
<i>Psaltriparus minimus</i>	Common bushtit	<b>A (R)</b>
<b>Sittidae</b>	<b>Nuthatches</b>	
<i>Sitta carolinensis</i>	White-breasted nuthatch	C (R)
<i>Sitta canadensis</i>	Red-breasted nuthatch	<b>C (W)</b>
<i>Sitta pygmaea</i>	Pygmy nuthatch	U (R)
<b>Certhiidae</b>	<b>Creepers</b>	
<i>Certhia americana</i>	Brown creeper	C (R)
<b>Troglodytidae</b>	<b>Wrens</b>	
<i>Catherpes mexicanus</i>	Canyon wren	U (R)
<i>Thryomanes bewickii</i>	Bewick's wren	<b>C (R)</b>

Scientific Name	Common Name	Relative Abundance
<i>Troglodytes aedon</i>	House wren	C (R)
<i>Troglodytes troglodytes</i>	Winter wren	U (W)
<b>Regulidae</b>	<b>Kinglets</b>	
<i>Regulus satrapa</i>	Golden-crowned kinglet	C (W)
<i>Regulus calendula</i>	Ruby-crowned kinglet	C (W)
<b>Silviidae</b>	<b>Old World warblers</b>	
<i>Poliophtila caerulea</i>	Blue-gray gnatcatcher	U (R)
<b>Turdidae</b>	<b>Thrushes</b>	
<i>Sialia mexicana</i>	Western bluebird	<b>C (R)</b>
<i>Sialia currucoides</i>	Mountain bluebird	C (S)
<i>Myadestes townsendi</i>	Townsend's solitaire	U (R)
<i>Catharus ustulatus</i>	Swainson's thrush	C (S)
<i>Catharus guttatus</i>	Hermit thrush	C (W)
<i>Turdus migratorius</i>	American robin	C (R)
<i>Ixoreus naevius</i>	Varied thrush	U (W)
<b>Mimidae</b>	<b>Mimic thrushes</b>	
<i>Mimus polyglottos</i>	Northern mockingbird	<b>A (R)</b>
<i>Toxostoma redivivum</i>	California thrasher	<b>C (R)</b>
<b>Motacillidae</b>	<b>Pipits and Wagtails</b>	
<i>Anthus rubescens</i>	American pipit	C (W)
<b>Bombycillidae</b>	<b>Waxwings</b>	
<i>Bombycilla cedrorum</i>	Cedar waxwing	C (W)
<b>Ptilonotidae</b>	<b>Silky-flycatchers</b>	
<i>Phainopepla nitens</i>	Phainopepla	U (R)
<b>Parulidae</b>	<b>Wood-Warblers</b>	
<i>Vermivora celata</i>	Orange-crowned warbler	<b>C (R)</b>
<i>Vermivora ruficapilla</i>	Nashville warbler	C (W)
<i>Dendroica coronata</i>	Yellow-rumped warbler	<b>C (W)</b>
<i>Dendroica nigrescens</i>	Black-throated gray warbler	U (S)
<i>Dendroica townsendi</i>	Townsend's warbler	U (W)
<i>Dendroica petechia</i>	Yellow warbler	U (S)
<i>Oporornis tolmiei</i>	MacGillivray's warbler	U (S)
<i>Geothlypis trichas</i>	Common yellowthroat	<b>C (R)</b>
<i>Wilsonia pusilla</i>	Wilson's warbler	C (W)
<i>Icteria virens</i>	Yellow-breasted chat	U (S)
<b>Thraupidae</b>	<b>Tanagers</b>	
<i>Piranga ludoviciana</i>	Western tanager	<b>C (S)</b>
<b>Emberizidae</b>	<b>Sparrows</b>	
<i>Pipilo chlorurus</i>	Green-tailed towhee	U (S)
<i>Pipilo maculatus</i>	Spotted towhee	<b>C (R)</b>
<i>Pipilo crissalis</i>	California towhee	<b>A (R)</b>
<i>Aimophila ruficeps</i>	Rufous-crowned sparrow	U (R)
<i>Spizella passerine</i>	Chipping sparrow	A (R)
<i>Spizella atrogularis</i>	Black-chinned sparrow	C (S)
<i>Poocetes gramineus</i>	Vesper sparrow	U (W)
<i>Chondestes grammacus</i>	Lark sparrow	C (R)
<i>Amphispiza belli</i>	Sage sparrow	U (R)
<i>Passerculus sandwichensis</i>	Savannah sparrow	U (W)
<i>Passerella iliaca</i>	Fox sparrow	U (W)
<i>Melospiza melodia</i>	Song sparrow	<b>C (R)</b>
<i>Melospiza lincolni</i>	Lincoln's sparrow	U (W)
<i>Zonotrichia leucophrys</i>	White-crowned sparrow	A (W)
<i>Zonotrichia atricapilla</i>	Golden-crowned sparrow	C (W)
<i>Junco hyemalis</i>	Dark-eyed junco	<b>C (R)</b>
<b>Cardinalidae</b>	<b>Cardinals and Allies</b>	
<i>Pheucticus melanocephalus</i>	Black-headed grosbeak	<b>C (S)</b>
<i>Passerina caerulea</i>	Blue grosbeak	C (S)
<i>Passerina amoena</i>	Lazuli bunting	U (S)
<b>Icteridae</b>	<b>Blackbirds</b>	

Scientific Name	Common Name	Relative Abundance
<i>Agelaius phoeniceus</i>	Red-winged blackbird	C (R)
<i>Agelaius tricolor</i>	Tricolored blackbird	U (R)
<i>Sturnella neglecta</i>	Western meadowlark	C (R)
<i>Quiscalus mexicanus</i>	Great-tailed grackle	U (R)
<i>Euphagus cyanocephalus</i>	Brewer's blackbird	A (R)
<i>Molothrus ater</i>	Brown-headed cowbird	A (R)
<i>Icterus bullockii</i>	Bullock's oriole	C (S)
<i>Icterus cucullatus</i>	Hooded oriole	C (S)
<b>Fringillidae</b>	<b>Finches</b>	
<i>Carpodacus purpureus</i>	Purple finch	C (R)
<i>Carpodacus mexicanus</i>	House finch	A (R)
<i>Carpodacus cassinii</i>	Cassin's finch	U (R)
<i>Carduelis pinus</i>	Pine siskin	C (W)
<i>Carduelis tristis</i>	American goldfinch	C (S)
<i>Carduelis psaltria</i>	Lesser goldfinch	C (R)
<i>Carduelis lawrencei</i>	Lawrence's goldfinch	U (R)
<b>Mammalia</b>	<b>Mammals</b>	
<b>Soricidae</b>	<b>Shrews</b>	
<i>Sorex ornatus</i>	Ornate shrew	C
<b>Talpidae</b>	<b>Moles</b>	
<i>Scapanus latimanus</i>	Broad-footed mole	C
<b>Vespertilionidae</b>	<b>Vespertilionid bats</b>	
<i>Myotis californicus</i>	California myotis	A
<i>Myotis ciliolabrum</i>	Western small-footed myotis	C
<i>Myotis evotis</i>	Long-eared myotis	U
<i>Myotis thysanodes</i>	Fringed myotis	U
<i>Myotis volans</i>	Long-legged myotis	U
<i>Myotis yumanensis</i>	Yuma myotis	U
<i>Myotis lucifugus</i>	Little brown bat	U
<i>Pipistrellus Hesperus</i>	Western pipistrelle	C
<i>Eptesicus fuscus</i>	Big brown bat	A
<i>Lasiurus blossevillii</i>	Western red bat	C
<i>Lasiurus cinereus</i>	Hoary bat	C
<i>Plecotus townsendi</i>	Townsend's long-eared bat	U
<b>Molossidae</b>	<b>Free-tailed bats</b>	
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat	A
<i>Eumops perotis</i>	Western mastiff bat	U
<b>Canidae</b>	<b>Foxes, Wolves, and relatives</b>	
<i>Canis latrans</i>	Coyote	C
<i>Urocyon cinereoargenteus</i>	Gray Fox	C
<b>Ursidae</b>	<b>Bears</b>	
<i>Ursus americanus</i>	Black bear	U
<b>Procyonidae</b>	<b>Raccoons and Relatives</b>	
<i>Bassariscus astutus</i>	Ringtail	U
<i>Procyon lotor</i>	Raccoon	C
<b>Mustelidae</b>	<b>Weasels, Martin, Skunks, and Allies</b>	
<i>Mustela frenata</i>	Long-tailed weasel	C
<i>Spilogale gracilis</i>	Western spotted skunk	C
<i>Mephitis mephitis</i>	Striped skunk	A
<b>Felidae</b>	<b>Cats</b>	
<i>Lynx rufus</i>	Bobcat	U
<i>Panthera concolor</i>	Mountain lion	U
<b>Cervidae</b>	<b>Deer</b>	A
<i>Odocoileus hemionus</i>	Mule deer	
<b>Sciuridae</b>	<b>Squirrels</b>	
<i>Spermophilus beecheyi</i>	California ground squirrel	U
<i>Sciurus griseus</i>	Western gray squirrel	C
<i>Neotamias merriami</i>	Merriam's chipmunk	U
<b>Geomyidae</b>	<b>Pocket gophers, kangaroo rats, kangaroo mice, and pocket mice</b>	

Scientific Name	Common Name	Relative Abundance
<i>Thomomys bottae</i>	Botta's pocket gopher	A
<i>Dipodomys agilis</i>	Pacific kangaroo rat	A
<i>Chaetodipus californicus</i>	California pocket mouse	A
<b>Muridae</b>	<b>Rats, mice, voles, and allies</b>	
<i>Neotoma fuscipes</i>	Dusky-footed woodrat	U
<i>Neotoma lepida</i>	Desert woodrat	C
<i>Peromyscus boylii</i>	Brush mouse	C
<i>Peromyscus californicus</i>	California mouse	C
<i>Peromyscus maniculatus</i>	Deer mouse	A
<i>Peromyscus truei</i>	Pinyon mouse	C
<i>Reithrodontomys megalotis</i>	Western harvest mouse	A
<i>Microtus californicus</i>	California meadow vole	A
<b>Leporidae</b>	<b>Rabbits and hares</b>	
<i>Sylvilagus audubonii</i>	Audubon's cottontail	A
<i>Lepus californicus</i>	Black-tailed jackrabbit	C
<i>Sylvilagus bachmani</i>	Brush rabbit	C

## Appendix C: Young Nak Botanical Survey

This list represents plant species detected by Impact Sciences on April 17 and May 22, 2003, and by Bruyeta Biological Consulting on July 13, 2003. Plant taxonomy and nomenclature generally follows Hickman, as amended on the Jepson Herbarium Interchange, located at:

<http://ucjeps.berkeley.edu/interchange.html>.

Asterisk assigned to common name indicates non-native (alien) plant taxa.

Scientific Name	Common Name	Abundance
<b>Gymnosperms</b>		
<b>Pinaceae</b> Pine Family		
<i>Pinus sabiniana</i>	Gray pine	Common
<b>Angiosperms-Dicots</b>		
<b>Amaranthaceae</b> Pigweed Family		
<i>Amaranthus albus</i>	Tumble pigweed	Uncommon
<b>Anacardiaceae</b> Sumac Family		
<i>Rhus trilobata</i>	Skunkbrush	Uncommon
<i>Toxicodendron diversilobum</i>	Poison oak	Scarce
<b>Asclepiadaceae</b> Milkweed Family		
<i>Asclepias californica</i>	California milkweed	Occasional
<i>Asclepias fascicularis</i>	Narrow-leaved milkweed	Scarce
<b>Asteraceae</b> Sunflower Family		
<i>Ambrosia</i> sp.	Bur-sage	Occasional
<i>Artemisia tridentata</i>	Great Basin sage	Common
<i>Artemisia dracuncululus</i>	Tarragon	Occasional
<i>Artemisia douglasiana</i>	Mugwort	Scarce
<i>Cirsium vulgare</i>	Bull thistle*	Common
<i>Conyza bonariensis</i>	Flax-leaved fleabane*	Occasional
<i>Conyza canadensis</i>	Horseweed	Occasional
<i>Corethrogne filaginifolia</i>	Chaparral aster	Common
<i>Erigeron foliosus</i>	Fleabane aster	Occasional
<i>Gnaphalium</i> sp.	Everlasting	Scarce
<i>Gutierrezia</i> sp.	Matchweed	Occasional
<i>Helianthus annuus</i>	Annual sunflower	Occasional
<i>Lactuca serriola</i>	Prickly-lettuce*	Uncommon
<i>Senecio flaccidus</i>	Sand washed butterweed	Scarce
<i>Sonchus oleraceus</i>	Common sow thistle*	Uncommon
<i>Stephanomeria</i> sp.	Wreath plant	Occasional
<i>Xanthium strumarium</i>	Cocklebur	Scarce
<b>Boraginaceae</b> Borage Family		
<i>Heliotropium curassavicum</i>	Wild heliotrope	Common
<b>Brassicaceae</b> Mustard Family		
<i>Brassica nigra</i>	Black mustard*	Common
<i>Hirschfeldia incana</i>	Short-pod mustard*	Abundant
<b>Caprifoliaceae</b> Honeysuckle Family		
<i>Sambucus mexicana</i>	Blue elderberry	Common
<b>Chenopodiaceae</b> Goosefoot Family		
<i>Chenopodium album</i> (or <i>murale</i> )	Lamb's quarters	Uncommon
<b>Cucurbitaceae</b> Cucumber Family		
<i>Marah macrocarpa</i>	Wild cucumber	Occasional

Scientific Name	Common Name	Abundance
<b>Angiosperms-Dicots (continued)</b>		
<b>Cuscutaceae</b> Dodder Family		
<i>Cuscuta</i> sp.	Dodder	Occasional
<b>Euphorbiaceae</b> Spurge Family		
<i>Croton setigerus</i>	Doveweed	Common
<b>Fabaceae</b> Pea Family		
<i>Lotus purshianus</i>	Indian clover*	Uncommon
<i>Lupinus</i> sp.	Lupine	Common
<i>Melilotus alba</i>	White sweetclover*	Uncommon
<b>Fagaceae</b> Oak Family		
<i>Quercus berberidifolia</i>	Scrub oak	Common
<i>Quercus chrysolepis</i>	Canyon live oak	Common
<i>Quercus douglasii</i>	Blue oak	Occasional
<i>Quercus kelloggii</i>	Black oak	Uncommon
<i>Quercus lobata</i>	Valley oak	Common
<i>Quercus wislizenii</i>	Interior live oak	Common
<i>Quercus</i> sp.	Unidentified oak (Hybrid)	Scarce
<b>Grossulariaceae</b> Currant Family		
<i>Ribes</i> sp.	Currant	Scarce
<b>Hamamelidaceae</b> Witchhazel Family		
<i>Liquidamber styraciflua</i> .	Liquidamber (Ornamental)*	Scarce
<b>Hydrophyllaceae</b> Waterleaf Family		
<i>Phacelia</i> sp.	Phacelia	Occasional
<b>Lamiaceae</b> Mint Family		
<i>Marrubium vulgare</i>	Horehound*	Occasional
<i>Stachys</i> sp.	Hedge nettle	Scarce
<b>Oleaceae</b> Olive Family		
<i>Fraxinus</i> sp.	Ash	Uncommon
<b>Onagraceae</b> Primrose Family		
<i>Oenothera elata</i> ssp. <i>hookeri</i>	Evening primrose	Occasional
<b>Plantaginaceae</b> Plantain Family		
<i>Plantago major</i>	Common plantain*	Common
<b>Polygonaceae</b> Buckwheat Family		
<i>Eriogonum fasciculatum</i> var. <i>polifolium</i>	California buckwheat	Occasional
<i>Eriogonum</i> sp.	Buckwheat (Yellow Flwr)	Common
<i>Eriogonum</i> sp.	Buckwheat (Pink Flwr)	Uncommon
<i>Polygonum aviculare</i>	Knotweed*	Uncommon
<i>Rumex</i> sp.	Curly dock*	Uncommon
<b>Rhamnaceae</b> Buckthorn Family		
<i>Rhamnus californica</i>	California coffeeberry	Occasional
<b>Rosaceae</b> Rose Family		
<i>Adenostoma fasciculatum</i>	Chamise	Occasional
<i>Pyrus communis</i>	Pear tree*	Occasional
<b>Rubiaceae</b> Madder Family		
<i>Galium aparine</i>	Bedstraw	Common
<b>Salicaceae</b> Willow Family		
<i>Populus tremuloides</i>	Quaking aspen	Uncommon
<i>Salix laevigata</i>	Red willow	Occasional
<i>Salix lasiolepis</i>	Arroyo willow	Occasional
<b>Schrophulariaceae</b> Snapdragon Family		
<i>Keckiella cordifolia</i>	Heart leaved penstemon	Uncommon
<i>Penstemon</i> sp.	Penstemon	Scarce
<b>Solanaceae</b> Nightshade Family		
<i>Datura wrightii</i>	Jimsonweed	Uncommon
<i>Nicotiana quadrivalvis</i>	Indian tobacco	Occasional

Scientific Name	Common Name	Abundance
<b>Angiosperms-Dicots (continued)</b>		
<b>Ulmaceae</b> Elm Family		
<i>Ulmus pumila</i>	Siberian elm*	
<b>Urticaceae</b> Nettle Family		
<i>Urtica dioica</i>	Stinging nettle	Occasional
<b>Viscaceae</b> Mistletoe Family		
<i>Phoradendron villosum</i>	Mistletoe	Occasional
<b>Angiosperms-Monocots</b>		
<b>Cyperaceae</b> Sedge Family		
<i>Carex praegracilis</i>	Sedge	Common
<i>Schoenoplectus acutus</i>	Hard-stem bulrush	Common
<b>Juncaceae</b> Rush Family		
<i>Juncus balticus</i>	Baltic rush	Common
<i>Juncus effusus</i>	Soft rush	Occasional
<i>Juncus patens</i>	Rush	Occasional
<i>Juncus xiphoides</i>	Iris-leaved rush	Occasional
<b>Poaceae</b> Grass Family		
<i>Avena barbata</i>	Slender wild oats*	Abundant
<i>Bromus diandrus</i>	Ripgut*	Abundant
<i>Bromus madritensis</i> ssp. <i>rubens</i>	Red brome*	Abundant
<i>Leymus condensatus</i>	Giant rye grass	Occasional
<i>Schismus barbatus</i>	Mediterranean grass*	Occasional
<i>Poa bulbosa</i>	Bulbous blue grass*	Occasional
<i>Poa secunda</i>	One-sided blue grass	Occasional
<i>Vulpia microsyachys</i>	Fescue	Common





**Least Bell's Vireo and Southwestern Willow Flycatcher Results for  
Surveys Conducted at the Young-Nak Retreat Center located at 24100  
Pine Canyon Road, Lake Hughes, California**

**Prepared by**

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Endangered Species Permit Number TE-062907-1

**Prepared for**

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## **Introduction**

This report summarizes the results of least Bell's vireo (*Vireo bellii pusillus*) and southwestern willow flycatcher (*Empidonax traillii extimus*) surveys conducted in 2004 at the Young-Nak Retreat Center. The primary objective of the survey was to determine the presence or absence of least Bells' vireo and southwestern willow flycatchers within the survey area and to document breeding status at the site.

## **Location**

The Young-Nak Retreat Center is located at 24100 Pine Canyon Road, Lake Hughes, Los Angeles County, California.

## **Survey Dates**

The survey was conducted on June 10, 17, 24 and July 1, 8, 18, 23, and 30, 2004.

## **Methodology**

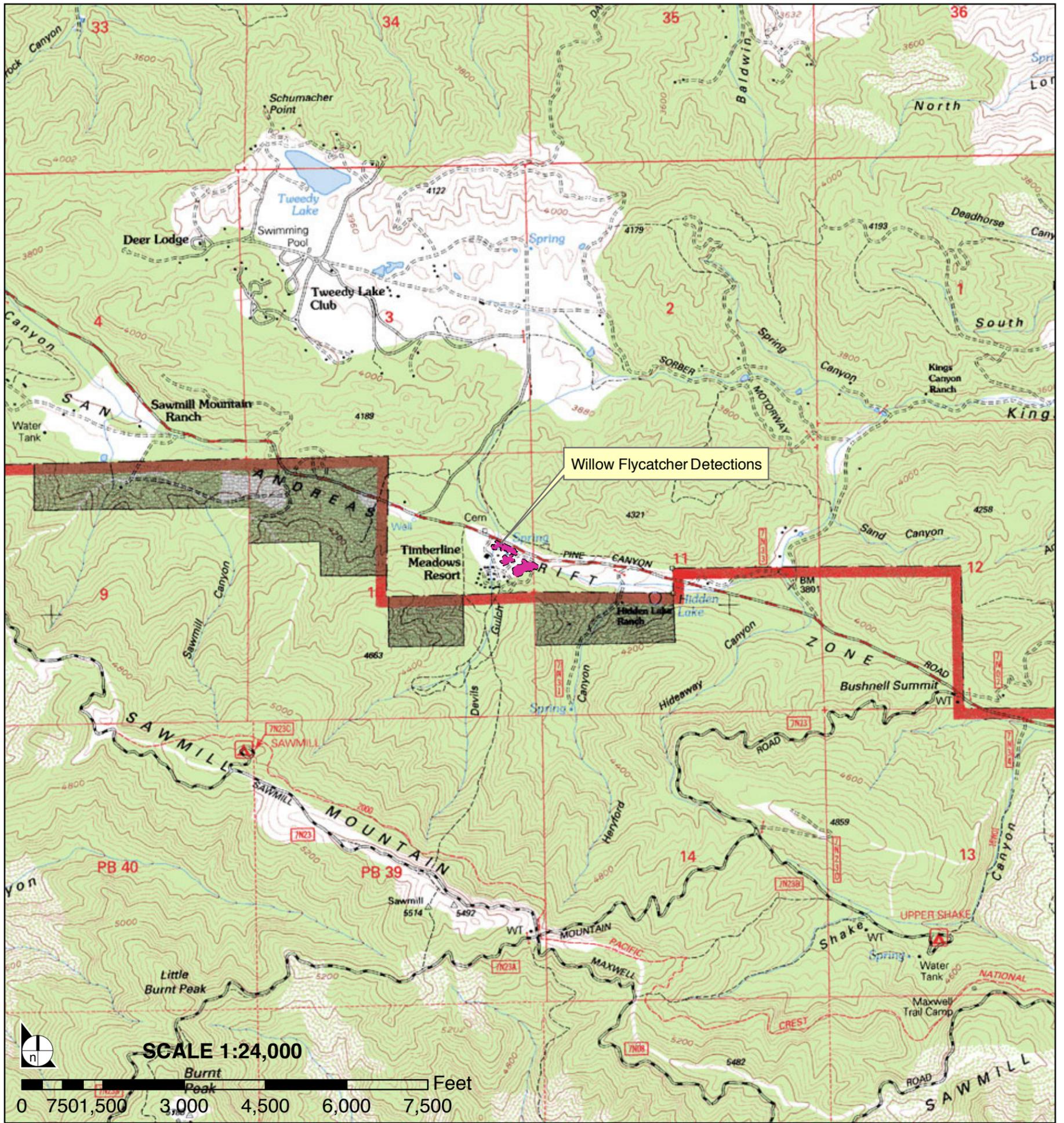
The surveys for least bells vireo and southwestern willow flycatcher were conducted in accordance with US Fish and Wildlife Service protocols set out in *Least Bells Vireo Guidelines* (2001) and *Southwestern Willow Flycatcher Protocol* (2000).

Andrew Forde of Impact Sciences, Inc., conducted all surveys under permit number TE-062907-1. The entire extent of the willow riparian and oak woodland/willow riparian habitat was surveyed on each visit to the site. These two plant communities consist of approximately 4 acres. Photographs of these two plant communities can be found in **Attachment A**.

Please refer to **Figure 1** (Burnt Peak Quadrangle), which depicts the location of the site, the extent of the survey area, the survey route, and the photographic log.

## **Weather Conditions**

The weather conditions during the survey were optimal for conducting surveys. Please refer to **Table 1** for weather conditions during the survey. The weather data provided in **Table 1** was taken from the Sandberg Weather Station.



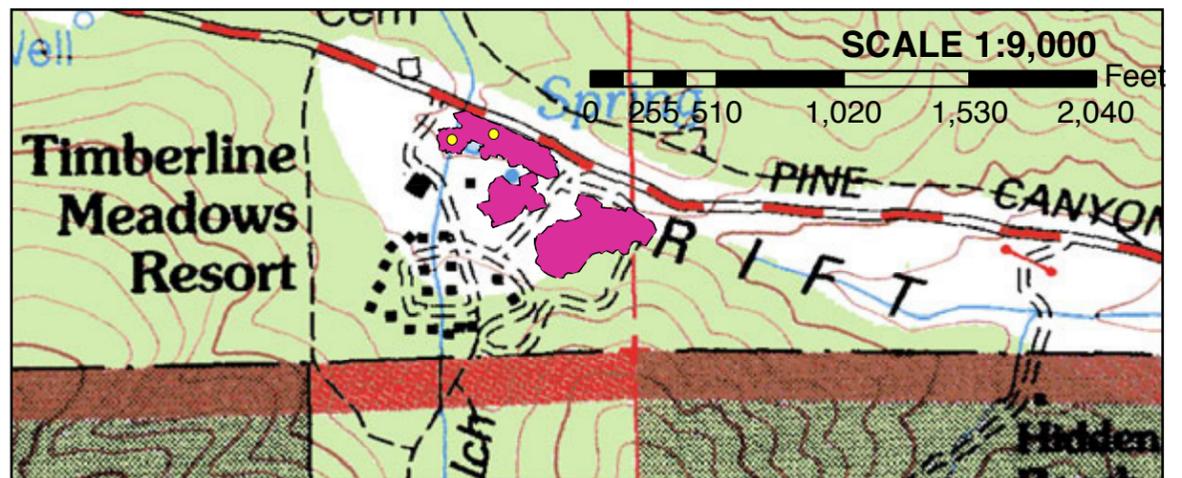
Willow Flycatcher Detections

SCALE 1:24,000

0 750 1,500 3,000 4,500 6,000 7,500 Feet

### Legend

- Willow Flycatcher
- Extent of Riparian Habitat
- Survey Route



SCALE 1:9,000

0 255 510 1,020 1,530 2,040 Feet

**Table 1****Weather Conditions During the Surveys**

Date	Time	Temperature	Wind Direction	Wind Speed	Conditions
June 10, 2004	5:52 am	46.9 °F	NW	6.9 mph	Clear
	6:52 am	48.0 °F	N	8.1 mph	Clear
	7:52 am	51.1 °F	NNW	19.6 mph	Clear
	8:52 am	54.0°F	N	10.4 mph	Clear
	9:52 am	57.0 °F	NNW	24.2 mph	Clear
June 17, 2004	5:52 am	57.0 °F	SSW	6.9 mph	Clear
	6:52 am	57.9 °F	SSW	8.1 mph	Clear
	7:52 am	62.1 °F	SSW	10.4 mph	Clear
	8:52 am	66.9 °F	S	10.4 mph	Clear
June 24, 2004	6:52 am	64.9 °F	NW	10.4 mph	Clear
	7:52 am	68.0 °F	NW	12.7 mph	Clear
	8:52 am	72.0 °F	NW	4.6 mph	Clear
	9:52 am	75.0 °F	NW	4.6 mph	Clear
July 1, 2004	6:52 am	52.0 °F	SW	8.1 mph	Clear
	7:52 am	55.0 °F	SSW	6.9 mph	Clear
	8:52 am	59.0 °F	SSW	5.8 mph	Clear
	9:52 am	63.0 °F	SSW	8.1 mph	Clear
July 8, 2004	6:52 am	57.9 °F	S	12.7 mph	Clear
	7:52 am	61.0 °F	S	11.5 mph	Clear
	8:52 am	63.0 °F	SSW	13.8 mph	Clear
	9:52 am	64.0 °F	S	15.0 mph	Clear
July 18, 2004	6:52 am	69.1 °F	NW	15.0 mph	Clear
	7:52 am	71.1 °F	NNW	12.7 mph	Clear
	8:52 am	75.0 °F	NW	12.7 mph	Clear
	9:52 am	78.1 °F	NW	5.8 mph	Clear
July 23, 2004	8:52 am	75.0 °F	NW	12.7 mph	Clear
	9:52 am	78.1 °F	NW	5.8 mph	Clear
	10:52 am	82.0 °F	SE	4.6 mph	Clear
July 30, 2004	6:52 am	64.0 °F	SW	5.8 mph	Clear
	7:52 am	64.9 °F	SSW	8.1 mph	Clear
	8:52 am	70.0 °F	SSW	8.1 mph	Clear

**Plant Communities**

Vegetation on the Young Nak site consists of eight plant communities, including willow riparian woodland, oak-willow woodland, pine forest, pine-oak woodland, scrub oak chaparral, mixed grassland, rush-sedge wetland, and annual grassland/disturbed.

Surveys for least Bell's vireo and southwestern willow flycatcher were conducted throughout the willow riparian community and the oak woodland/willow riparian community.

### ***Willow Riparian***

There is approximately 1.5 acre of willow riparian woodland located along the northern portion of the site. Mature willow trees (*Salix* sp.) dominate the habitat with valley oak (*Quercus lobata*) occasionally occurring throughout the habitat. The understory of the community is composed of giant nettle (*Urtica dioica*), mulefat (*Baccharis salicifolia*), and wet meadow species such as rushes (*Juncus* sp.), sedges (*Scirpus* sp.), and tules (*Typha* sp.). Two ponds occur within this habitat type. Although the extent of the willow riparian habitat is relatively small the overall habitat is of good quality.

### ***Oak Woodland/Willow Riparian***

There are approximately 3.9 acres on the project site characterized by the intergrading of willow riparian woodland and oak woodland. These willow-oak woodlands occur in the central and northeast portions of the site.

## **Results**

Please refer to **Figure 2**, which depicts the extent of the survey area, survey route, and willow flycatcher detections during the survey. No least Bell's vireos were detected during the survey. Brown-headed cowbirds were seen and heard calling during each of the visits. Western scrub jays were also present at the site and were feeding, in large numbers, on exotic fruit trees.

A willow flycatcher was detected and confirmed by a fitz-bew at the Young-Nak Retreat Center during the first visit on June 10, 2004. This individual was observed chasing another individual, possibly another willow flycatcher. During the chase a number of interaction calls, including whitt calls, were made. However, the second individual was not confirmed by a fitz-bew.



**Legend**

-  Willow Flycatcher Detections
-  SurveyRoute
-  Extent of Riparian Habitat



NOT TO SCALE

SOURCE: Impact Sciences, Inc. – August 2004

FIGURE 2

D1-5  
Survey Area, Survey Route, and Willow Flycatcher Detections

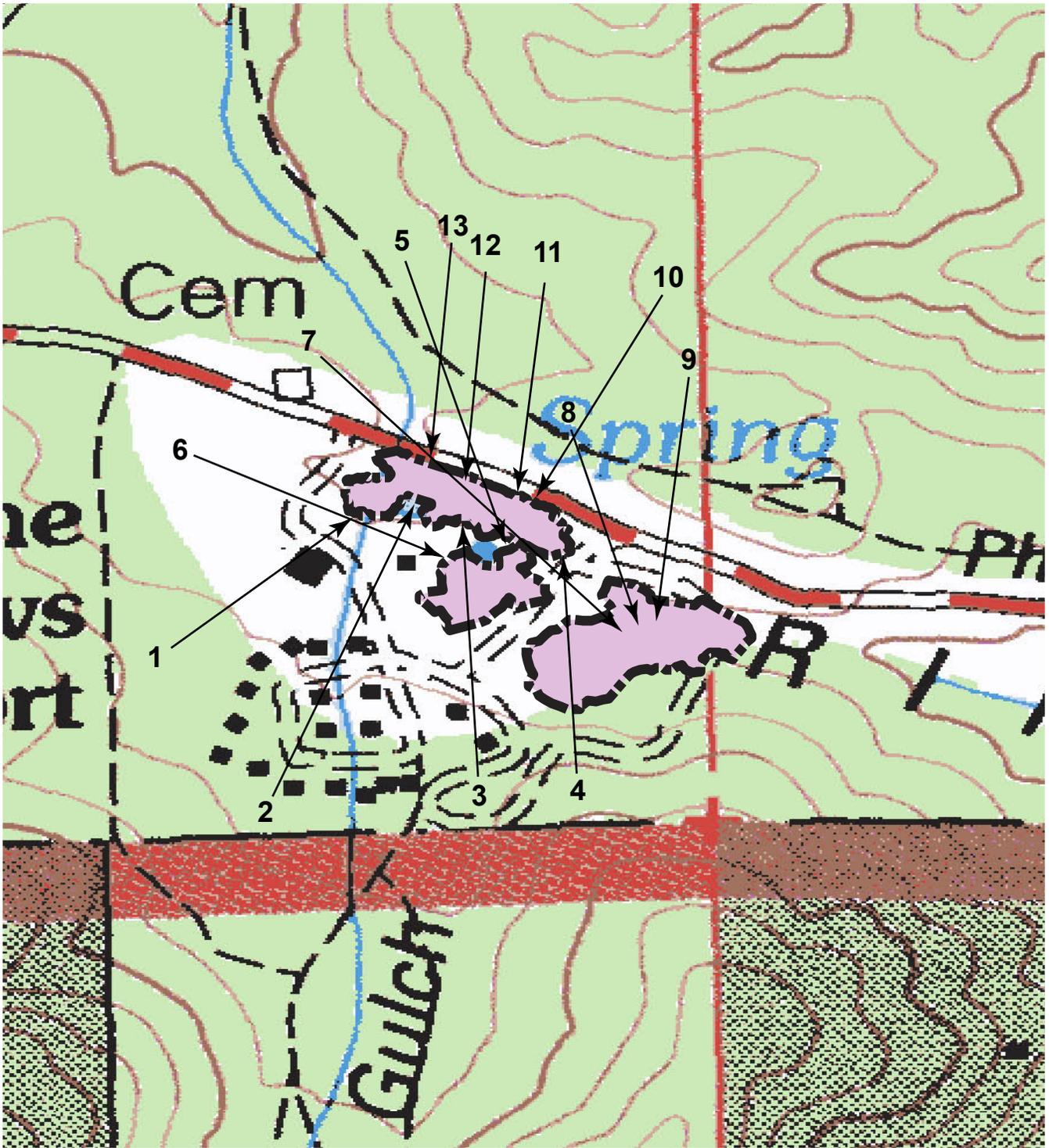
On the second visit on June 17, 2004, an individual willow flycatcher was detected and confirmed by a fitz-bew. During the second visit, a number of whitt calls were also heard, but no other individuals were detected.

During the third visit on June 24, 2004, a whitt call was heard on arrival at the site. However, presence was not confirmed by a fitz-bew. Behavior observed on the first two visits suggested that there was a chance that southwestern willow flycatchers were nesting at the site. However, because a number of cowbirds and western scrub jays were present and that there was a chance that southwestern willow flycatchers were nesting at the site (based on behavior observed during the first two visits), calls were not broadcast during the third visit. Because calls were not broadcast, it was considered prudent to sit in a concealed location to listen for calls and to conduct observations. However, after two hours, no individuals were heard or observed.

During the fourth and fifth visit on July 1 and July 8, 2004, no individuals were heard or observed after sitting in concealed locations for approximately two hours. Therefore, calls were broadcast throughout the habitat. No calls of any type were heard during these two visits. Two subsequent surveys conducted on July 18 and July 23, 2004 also failed to detect the presence of any southwestern willow flycatchers. Please also refer to the Willow Flycatcher Survey and Detection Form in **Attachment B**.

The surveys conducted at the Young-Nak Retreat Center revealed that migrant willow flycatchers are using the site. Although a willow flycatcher was detected and confirmed at the site on June 17, 2004, the individual was determined to be a late migrant. Evidence to support this comes from the fact that willow flycatchers were detected migrating through the Lower Colorado River near Yuma, Arizona on June 13, 2004. The surveys along the Lower Colorado River were conducted as a volunteer with SWCA Environmental Consultants based in Flagstaff, Arizona under the permit of Thomas J. Koronkiewicz (TE-02865).

**ATTACHMENT A**



**Legend:**

- ← Direction of Photo
- Survey Route
- █ Extent of Riparian Habitat



Photo 1 – Edge of Habitat



Photo 2 – Interior of Habitat with Dry Pond

SOURCE: Impact Sciences, Inc. – July 2004



D1AA-2

Photos 1 & 2



Photo 3 – Interior of Habitat



Photo 4 – Edge of Habitat

SOURCE: Impact Sciences, Inc. – July 2004



D1AA-3

Photos 3 & 4



Photo 5 – Interior of Habitat



Photo 6 – Edge of Habitat

SOURCE: Impact Sciences, Inc. – July 2004



D1AA-4

Photos 5 & 6



Photo 7 – Interior of Habitat Depicting Dry Pond



Photo 8 – Interior of Habitat Depicting Dry Pond

SOURCE: Impact Sciences, Inc. – July 2004



D1AA-5

Photos 7 & 8



Photo 9 – Interior of Habitat Depicting Dry Pond



Photo 10 – Interior of Habitat

SOURCE: Impact Sciences, Inc. – July 2004



D1AA-6

Photos 9 & 10



Photo 11 – View From Road Depicting Pond With Standing Water



Photo 12 – View From Road Depicting Pond With Standing Water

SOURCE: Impact Sciences, Inc. – July 2004



D1AA-7

Photos 11 & 12



Photo 13 – View of Giant Nettles From Edge of Pond

SOURCE: Impact Sciences, Inc. – July 2004



D1AA-8

Photo 13

**ATTACHMENT B**

### Willow Flycatcher Survey and Detection Form (revised April 2004)

Site Name: Young-Nak Retreat Center

State: California

County: Los Angeles

USGS Quad Name: Burnt Peak

Elevation: 1230 meters

Is copy of USGS map marked with survey area and WIFL sightings attached?  Yes  No

Site Coordinates				
	North UTM	East UTM	Datum	Zone
Start	3841964	E 357483	NAD 27	
Stop	3841880	E 357654		11

\*\* Fill in additional site information on back of this page \*\*

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey Time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N	Cowbirds Detected? Y or N	Presence of Livestock, Recent sign, If Yes, Describe Y or N	Comments About this Survey (e.g., bird behavior, evidence of pairs or breeding, number of nests, nest contents or number of fledges seen, potential threats)
1. <u>Andrew Forde</u>	06/10 Start 05:30 Stop 10:00 Total hrs <u>4.5</u>	1	0	0	N	Y	N	Heard fitz-bew and saw the individual chase another WIFL. However, second individual was not confirmed with a fitz-bew. Lots of whitt calls heard.
2. Andrew Forde	06/17 Start 05:30 Stop 08:30 Total hrs <u>3</u>	1	0	0	N	Y	N	One fitz-bew and a couple of whitts were heard. No confirmation of a second individual. Call not broadcast due to the presence of cowbirds and scrub jays.
3. Andrew Forde	06/24 Start 06:30 Stop 09:30 Total hrs <u>3</u>	0	0	0	N	Y	N	Heard whitt call but presence was not confirmed with a fitz-bew. Call not broadcast due to the presence of cowbirds and scrub jays.
4. Andrew Forde	07/01 Start 06:30 Stop 09:30 Total hrs <u>3</u>	0	0	0	N	Y	N	Did not hear any fitz-bews or whitt calls. Spent a few hours sitting in concealed locations to determine presence. Broadcast call throughout the habitat, no responses.

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Survey # Observer(s) (Full Name)	Date (m/d/y) Survey Time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N	Cowbirds Detected? Y or N	Presence of Livestock, Recent sign, If Yes, Describe Y or N	Comments About this Survey (e.g., bird behavior, evidence of pairs or breeding, number of nests, nest contents or number of fledges seen, potential threats)
5. <u>Andrew Forde</u>	07/08 Start 06:30 Stop 09:30 Total hrs <u>3</u>	0	0	0	N	Y	N	Did not hear any fitz-bews or whitt calls. Spent a few hours sitting in concealed locations to determine presence. Broadcast call throughout the habitat, no responses.
Overall Site Summary (Total <b>resident</b> WIFLs only) Total survey hrs <u>16.5</u>		<b>Adults</b> 0	<b>Pairs</b> 0	<b>Territories</b> 0	<b>Nests</b> 0	Were any WIFLs color-banded? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, report color combination(s) in the comments section on back of form		

US Fish and Wildlife Service Permit No.: TE-062907  
Reporting Individual: Andrew Forde

CA Department of Fish and Game Permit No.: 801037-04  
Date Report Completed: July 29, 2004

*Submit original form by August 1<sup>st</sup>. Retain a copy for your records.*

# IMPACT SCIENCES, INC.

Fill in the following information completely. Submit original form by August 1<sup>st</sup>. Retain a copy for your records.

Reporting Individual: Andrew Forde  
Affiliation: Impact Sciences, Inc.  
Site Name: Young Nak Retreat Center

Phone # 818.879.1100  
E-mail aforde@impactsociences.com  
Date Report Completed July 29, 2004

Did you verify that this site name is consistent with that used in previous years? (check one)  
 Yes  No

If name is different, what name(s) was used in the past?  
\_\_\_\_\_

If site was surveyed last year, did you survey the same general area this year?  
Yes/No If no, summarize in comments below.

Did you survey the same general area during each visit to this site this year?  
Yes/No If no, summarize in comments below.

Management Authority for Survey Area (check one):

Federal  Municipal/County  State  Tribal  Private

Name of Management Entity or Owner (e.g., Tonto National Forest)  
\_\_\_\_\_

Length of area surveyed: 1200 feet (4 acres) (specify units)

Vegetation Characteristics: Overall, are the species in tree/shrub layer at this site comprised predominantly of (check one):

Native broadleaf plants (entirely or almost entirely, includes high-elevation willow)

Mixed native and exotic plants (mostly native)

Mixed native and exotic plants (mostly exotic)

Exotic/introduced plants (entirely or almost entirely)

Identify the 2-3 predominant tree/shrub species: willow, mule fat, giant nettle

Average height of canopy (Do not put a range): 25 feet (specify units)

Was surface water or saturated soil present at or adjacent to site? (check one)

Yes  No

Distance from the site to surface water or saturated soil: 0 (specify units)

## IMPACT SCIENCES, INC.

Did hydrological conditions change significantly among visits (did the site flood or dry out)?

Yes  No (check one)

If yes, describe in comments section below.

Remember to attach a copy of a USGS quad / topographical map (REQUIRED) of the survey area, outlining the survey site and location of WIFL detections. Also include a sketch or aerial photograph showing details of site location, patch shape, survey route in relation to patch, and location of any willow flycatchers or willow flycatcher nests detected. Such sketches or photographs are welcomed, but DO NOT substitute for the required USGS quad map. Please include photos of the interior of the patch, exterior of the patch, and overall site and describe any unique habitat features.

Comments (attach additional sheets if necessary):

Three ponds exist within the riparian vegetation. At the beginning of the survey two of the ponds were approximately 1.5 – 2 feet in depth, and the other was approximately 2–3 feet in depth. The two shallower ponds had dried up by the end of the last survey. The deeper pond had approximately 1 foot of water in it by the end of the surveys. Please see attached comments.

WIFL Detection Locations:

Date Detected	N UTM	E UTM	Date Detected	N UTM	E UTM
June 10, 2004	3841952	357505			
June 17, 2004	3841961	357555			



December 20, 2004

Josh Phillips  
Impact Sciences, Inc.  
2101 Webster St, Suite 1825  
Oakland, California 94612

Subject: Sensitive Butterfly Survey for Young Nak Retreat Center, Los Angeles County, California.

Dear Mr. Phillips:

### **Introduction**

At the request of Impact Sciences, Inc. (ISI), Guy Bruyca conducted a field survey of the above-referenced approximately 30-acre Young Nak Retreat Center (Young Nak) site located along Pine Canyon Road in northwestern Los Angeles County, California. The specific goal of this survey is to assess potential suitability of the Young Nak site as habitat to support the San Emigdio blue (*Plebulina emigdionis*, herein SEB) and Tehachapi Mountain silverspot (*Speyeria egleis tehachapina*, herein TMS), both considered federal species of concern. Additional searches were conducted for the unsilvered fritillary (*Speyeria adiastra atossa*, herein UFB), now presumed extinct but historically known from the region, and other narrow-endemic butterfly species. In addition to focused surveys for the aforementioned taxa, a butterfly inventory and general insect survey was conducted in July 2003. This report briefly describes the relevant vegetation, topography, and present land use throughout the Young Nak site in an effort to assess the overall quality of the habitat as it pertains to the SEB, TMS, UFB and other butterfly species.

### **Project Location**

The Young Nak site is generally located approximately seven miles west of Lake Hughes along and south of Pine Mountain Road. Specifically, the site is located at 24100 Pine Mountain Road near the intersection of Pine Mountain Road and Kings Canyon Road. The site is located in the Burnt Peak/Portal Ridge region within Angeles National Forest lands south of the Antelope Valley. The site is situated in the southwestern portion of Section 12 within the U.S.G.S. Burnt Peak, CA 7.5' series quadrangle map

### **Sensitive Butterfly Species Background Information**

Many butterflies are becoming increasingly scarce in southern California, especially in coastal and valley areas where natural habitats have been converted for human uses or have been adversely impacted by various anthropogenic disturbances. Additionally, in the relatively less disturbed foothill and mountain areas the spread of invasive non-native weedy vegetation, grazing, fire suppression, and off-road vehicle activity is threatening many native plants, including butterfly host plants.

Butterflies are among the more familiar and easily identified insects to the amateur entomologist or nature enthusiast, and can be a good indicator of habitat quality in a particular area. Many butterfly species are easily monitored and respond quickly to changes in habitat, and their absence (in places where they were formerly present) can be an important indicator of habitat degradation. In that vein, butterfly occupants of the Young Nak site are discussed in detail herein.

There are approximately 135 recorded butterfly species from Los Angeles County, of which approximately 120 are considered resident. Some species have adapted well to ornamental landscapes, but many formerly common species have now become increasingly rare over the past few decades due to urban expansion and other factors. Several butterflies presently (and/or

historically) found in Los Angeles County are now protected or are considered species of special concern by federal agencies. Several additional species are considered to be rare by professional entomologists in the region, but are afforded no protection status by any regulatory agencies. A complete list of all sensitive butterfly species is provided in **Table 1**. At least three butterfly species that once occurred in Los Angeles County are now presumably extinct. These include, 1) the unsilvered fritillary (*Speyeria adiastra atossa*), which was last observed near Mt. Pinos in 1959, 2) a very localized race of the Sonoran blue (*Philotes sonorensis*) that once occurred in the upper San Gabriel wash above Azusa (to 1968), and 3) the Palos Verdes blue (*Glaucopsyche lygdamus palosverdesensis*, herein referred to as PVB), which was last observed on the Palos Verdes peninsula in 1983.

**Table 1.**  
Los Angeles County Sensitive Butterflies

Common Name	Scientific Name	Status	Range*
Quino Checkerspot	<i>Euphydryas editha quino</i>	FE	N
El Segundo Blue	<i>Euphilotes battoides allyni</i>	FE	N
Palos Verdes Blue	<i>Glaucopsyche lygdamus palosverdesensis</i>	FE	N
San Emigdio Blue	<i>Plebulina emigdionis</i>	[FSC]	Y
Santa Monica Mountains Hairstreak	<i>Satyrium auretorum fumosum</i>	[FSC]	N
Emmel's Elfin	<i>Callophrys mossii hidakupa</i>	[FSC]	N
Wandering Skipper	<i>Panoquina errans</i>	[FSC]	N
Alkali Skipper	<i>Pseudocopaodes eunus</i>	[FSC]	N
Tehachapi Mountains Silverspot	<i>Speyeria egleis tehachapina</i>	[FSC]	Y
Monarch Butterfly	<i>Danaus plexippus</i>	**	Y
Comstock's Blue	<i>Euphilotes battoides comstocki</i>	r	Y
Bright Blue Copper	<i>Lycaena heteronea clara</i>	r	Y
Veined Blue	<i>Icaricia neurona</i>	r	Y
Green (=Skinner's) Blue	<i>Icaricia lupini chlorina</i>	r	Y
Unsilvered Fritillary	<i>Speyeria adiastra atossa</i>	X	Y
San Gabriel Mountain Sonoran Blue	<i>Philotes sonorensis extinctus</i>	X	N

\*Indicates whether survey area is within or reasonably close to known historical range of indicated taxon (Y=yes, N=no) FE=Federally endangered, [FSC]=Federal Species of Concern, r = species considered rare by professional entomologists (no status); X=Presumed extinct (no status), \*\* Over-wintering (or roosting) sites should be protected, butterfly probably not at risk currently

Three butterflies known from Los Angeles County are now on the federal list of endangered wildlife. These include the quino checkerspot (*Euphydryas editha quino*, herein QCB), the El Segundo Blue (*Euphilotes battoides allyni*, herein ESB), and the PVB.

No relatively recent records for QCB exist from Los Angeles County. Populations of QCB are historically known from two locations in the Santa Monica Mountains, 1) Tapia Camp (1947), and 2) Point Dume (1954). Both of these colonies appear to have been extirpated, as adults have not been observed at or in the vicinity of either location in approximately 35 years. Most extant populations of QCB are known from southwestern Riverside County in the vicinity of Temecula and Murrieta, and southern San Diego County in the vicinity of Otay Mountain.

The ESB is restricted to the coastal dune systems in southwestern Los Angeles County. The ESB is presently known from only three locations: 1) the dunes west of the Los Angeles International Airport (LAX); 2) the dunes west of the Chevron Oil refinery; and, 3) Malaga Cove north of the Palos Verdes peninsula. This butterfly is strongly associated with the flower heads of its host plant, coastal or dune buckwheat (*Eriogonum parviflorum*). Adults are active in a single brood from mid-July to early September.

The PVB was restricted to the Palos Verdes peninsula where it flew in a single generation during February and March. This butterfly was strongly associated with its principal host

plant, milkvetch (*Astragalus trichopodus* var. *lonchus*). The closest relative of the PVB is the southern blue (*Glaucopsyche lygdamus australis*), which occurs throughout most of the remainder of southern California. The southern blue is known to feed in the larval stage primarily on deerweed (*Lotus scoparius*), although larvae occasionally have been found on milkvetch.

The PVB was believed to have become extinct in 1983 when the last known large stand (approximately 120 plants) of milkvetch was eliminated by construction of a baseball field at Hesse Park on the peninsula. In the spring of 1994, a colony of what is believed to be the PVB was discovered at a slightly more inland locality on Navy property in San Pedro. At this locality the butterflies are associated with both milkvetch and deerweed. Some researchers maintain that it is possible that genetic differences exist between seaward-facing peninsular populations (PVB) and the extant Navy colony.

Several other butterflies are considered uncommon in Los Angeles County, some having federal or state status (i.e., species of special concern), and others warrant careful monitoring due to declining populations or extremely limited ranges within Los Angeles County. These include (but are not limited to) the San Emigdio blue (*Plebulina emigdionis*), the Santa Monica Mountains hairstreak (*Satyrium auretorum fumosum*), the wandering skipper (*Panoquina errans*), and the Tehachapi Mountain silverspot (*Speyeria egleis tehachapina*).

Sensitive and/or narrow-endemic butterflies believed to have potential for occurrence on the subject property, based on known ranges, the presence of associated vegetation communities, elevations on site, host plant availability within the general vicinity, and other requirements, are discussed in more detail below.

#### **San Emigdio Blue Butterfly (*Plebulina emigdionis*)**

The SEB is a federal species of concern and is restricted to southern California in lower Sonoran and riparian habitats from the Owens Valley south to the Mojave River and west to northern Ventura and Los Angeles Counties. This butterfly can be locally abundant in association with its primary host plant, four-wing saltbush (*Atriplex canescens*). This butterfly has also been observed in association with quail bush (*Atriplex lentiformis*) at scattered locations. The limited distribution of SEB was perplexing to early researchers based on the abundance and widespread distribution of its host plant, which occurs throughout the western United States. SEB larvae have formed a symbiotic relationship with at least one ant species, *Formica pilicornis* (Ballmer et al, 1991). This may account for, at least in part, SEB's limited range. These ants presumably extract droplets (containing glucose and amino acids) from the nectary glands of SEB larvae and the ants offer the larvae protection from predators. This relationship is actually quite common among other members of the butterfly family Lycaenidae, to which the SEB belongs. The male butterfly is small (approximately 20-25 millimeters in wingspan) and is blue with a wide brown border on the dorsal wing surface. The slightly larger female is primarily brown with blue at the wing bases and orange bands on the edges of the dorsal wing surface. The ventral wing surface of both sexes is mostly white with small black dots, with smaller blue dots along the hind wing edges.

SEB adults are active from late April to early September. The SEB can have up to three broods per year with the first brood in late April to May, the second brood from late June to early July, and the third brood in August to early September (Emmel et al, 1973). Adults are generally observed perching on their host plant or on other plants in the immediate vicinity, and have also been observed nectaring on nearby flowers. The females deposit single echinoid eggs on the leaves of the host plant after mating. These eggs hatch in about eight to ten days and the larvae begin feeding on the leaves immediately. Diapause normally occurs in the late or last instar of larval development, presumably in the second and/or third broods depending on climatic conditions. The mature larva is variable in color from blue, green, brown, and

combinations thereof, and is densely covered with fine white hairs. Retractable glands located on the eleventh larval segment can be protruded when stimulated. Researchers believe these organs are attractive to ants (Emmel et al, 1973).

There are several other Lycaenid butterflies classified as 'blues' (subfamily Polyommatainae) that occur with the SEB in portions of its range. Some of these species are similarly sized and have markings that can be easily confused with SEB. Commonly observed sympatric butterfly species include the blue copper (*Lycaena heteronea*), southern blue (*Glaucopsyche lygdamus australis*), Boisduval's blue (*Icaricia icaroides*), acmon blue (*Icaricia acmon*), western tailed-blue (*Everes amyntula*), marine blue (*Leptotes marina*), pigmy blue (*Brephidium exilis*), Bernardino blue (*Euphilotes bernardino*), and square-spotted blue (*Euphilotes battoides*). SEB can be initially distinguished from many of these species by its relatively large size and its strong association with four-wing saltbush or quail bush.

Due to its extremely limited distribution in southern California and its propensity for isolated small colonies, the SEB can be easily impacted by anthropogenic disturbances. Many colonies in the Mojave Desert and Owens Valley are isolated and are probably not under any immediate threat, but other colonies found closer to growing desert communities and suburban Los Angeles cities are situated near major roads, railroad tracks and other developments, which may contribute to further decline. Some of these populations have already been extirpated; others are threatened by these impacts.

Some of the known localities for this species include the Lower Haiwee Reservoir in Inyo County, Mojave River area near Victorville, and Bouquet and Mint Canyons in Los Angeles County. It is thought that populations in the Mint Canyon area near Santa Clarita were extirpated in the late 1980's and early 1990's. However, Guy Bruyey did observe one extant SEB population in Soledad Canyon as recently as August 1999. Additionally, Guy Bruyey and other researchers observed a colony of SEB in association with *Atriplex lentiformis* in the Santa Clara River area in April 2004.

#### **Tehachapi Mountain Silverspot Butterfly (*Speyeria egleis tehachapina*)**

The TMS is a geographic race (subspecies) of *Speyeria egleis* and may be one of the rarest butterflies in North America. There are currently nine or more described subspecies of *S. egleis*, each of which is recognized based on geographically definable characteristics such as foodplant association and other ecological factors, larval morphology, wing coloration and size of the adult butterflies. The combined ranges of all subspecies extend from central California to Canada along the Pacific coast, and east to Montana and Colorado (Howe, 1975). The TMS is the southern-most subspecies of *egleis*. Two other subspecies of *egleis* occur in California: *egleis egleis* (upper elevation slopes of the northern Sierra Nevada to about Mount Whitney) and *egleis oweni* (Cascade Range in extreme northern California and Oregon). Historically, TMS was known from only four type specimens collected from the Tehachapi Mountains in Kern County in July 1918 by the eminent southern California lepidopterist, John Adams Comstock. Additional relatively recent (post 1970) records for this subspecies exist from various peaks within the Tehachapi and Piute Mountain Ranges. This brush-footed butterfly is medium to large-sized (approximately 40-45 millimeters in wingspan), with primarily light orange and black markings on the dorsal wing surface and very faint (or even absent) silver markings on the ventral hindwing surface, and is a member of the insect family Nymphalidae.

TMS and other *Speyeria* species utilize herb violets (*Viola* species) as their primary larval host plants. It is strongly suspected that TMS uses *V. purpurea* as a host plant on the slopes of the Tehachapi Mountains (Emmel & Emmel, 1973). Adult butterflies have been observed nectaring on the flowers of *Eriodictyon*, *Cirsium* and other native plants.

TMS adults are primarily active in July (and occasionally into early August), during which time they can be observed in grassy meadows or clearings in pine forests inhabited by one or more of its host plant species. Males and virgin females are occasionally observed on hilltops. 'Hilltopping' is a mate-locating behavior used by many butterflies, and TMS is considered a hilltopper species (Emmel & Emmel, 1973, GPB pers. obs.). After mating, the females deposit single barrel-shaped yellowish eggs on leaf litter near native violets. After the eggs hatch the young larvae locate cracks in the soil or other concealed sites in which they diapause until the following spring. After spring rains, TMS larvae are stimulated to break diapause and feed on fresh violet leaves until completing their development. The larvae usually pupate in June and July and the adults emerge 14 to 21 days later. Although the life history of this subspecies has not been described to GPB's knowledge, the mature larva is probably two inches long and black with rows of black or white branching spines as are most members of the genus *Speyeria*.

Since its description by Comstock in 1920, TMS has been considered highly localized and restricted in its distribution to the Tehachapi Mountains, and very few records of this subspecies are known. The introduction of invasive non-native grasses and other weedy annuals associated with human activities in the area has 'choked out' many native low-growing spring annuals, including violets. These anthropogenic disturbances, including livestock grazing, agriculture activities, off-road vehicle use, and various other developments may have adversely effected TMS populations in the area, especially in the southern part of its range. It should be noted, however, that this butterfly is rarely observed and has received little scientific study, and its historical distribution in northwest Los Angeles County has never been fully documented. Therefore, attempts at defining the reasons for its limited distribution are only speculative at this point. Other less obvious factors including drought and predation by non-native sow bugs (*Porcellio laevis*) and earwigs (*Forficula auricularia*) may also play an important role in the decline of native insect populations. These factors have been considered potentially important in the decline of the federally endangered Quino checkerspot butterfly in Riverside and San Diego Counties (Ballmer, et al., 1998).

TMS is sympatric with two other *Speyeria* species. A related species often confused with the TMS, the Macaria fritillary (*Speyeria callipe macaria*) is common from the Mount Pinos region north through the Tehachapi, Piute and Greenhorn Ranges. This butterfly can be abundant throughout its range in the central mountain ranges and differs from TMS by having a lighter orange coloration on the dorsal surface of the wings and bright silver spots on the ventral hind wing surface. The Macaria fritillary also uses violets as its primary larval host plant. Throughout its range (especially the northern portions) an unsilvered form (named 'laurina' by William Wright in the early 1900's) can be found, which can be easily confused with the similarly unsilvered TMS. TMS is typically darker and more uniformly brown on the ventral surface of the wings than this form of the Macaria fritillary. Although *macaria* is sympatric with TMS in portions of its range, it is typically observed earlier in the spring and summer than TMS, flying from late May through mid July. It is also frequently observed on hilltops.

Another sympatric *Speyeria* species confused with TMS is Henne's fritillary (*Speyeria coronis hennei*). This butterfly is usually observed on hilltops and in pine forests inhabited by various violet species from the Mount Pinos area north to the Tehachapi and Piute Mountain Ranges. Henne's fritillary is typically larger than TMS (approximately 50-65 millimeters in wingspan), and exhibits much brighter orange and black markings on the ventral surface of the wings. Additionally, *hennei* has distinctively large and bright silver spots on the ventral hindwing surface, which the TMS lacks. Adults are active from late June to early August.

The UFB, a third *Speyeria* species known from the region where TMS occurs is now considered extinct and is discussed below. Based on known records, distributional patterns, and information

as it relates to other extant *egleis* and *adiaste* populations, some researchers have suggested that UFB and TMS were probably not sympatric (David Hawks, pers. comm.).

#### **Unsilvered Fritillary Butterfly (*Speyeria adiaste atossa*)**

The UFB is a presumed extinct geographic race (subspecies) of *Speyeria adiaste*, a species confined to the Coast Ranges of central and southern California. The UFB was the southern-most subspecies of *adiaste*. Two other extant subspecies of *adiaste* occur in California: *adiaste adiaste* (higher remote areas of the Santa Cruz Mountains) and *adiaste clemencei* (Monterey and San Luis Obispo Counties above 3,500 feet).

The UFB is considered to be the largest and most beautifully marked of the *adiaste* group. This brush-footed butterfly is medium to large-sized (approximately 45-55 millimeters in wingspan), with bright orange and greatly reduced black markings on the dorsal wing surface. Silver markings on the ventral hindwing surface are absent in this species.

Historically, UFB was known from the Tehachapi Mountains, Tejon Mountains and Mount Pinos region of Los Angeles and Kern Counties. It was at one time a very abundant butterfly as noted by Los Angeles County Museum of Natural History entomologist John Adams Comstock, who in the 1920's observed UFB by the 'hundreds' along the Old Ridge Route at Sandberg and Liebre Gulch (this location is west of and within the vicinity of the survey area). The last known observations of UFB occurred in 1959 just south of the town of Tehachapi and near Mount Pinos (Emmel & Emmel, 1973).

Many theories exist on why this butterfly has disappeared. Possible explanations include grazing, the introduction of invasive non-native grasses into the area, and a prolonged drought that began in the late 1950's (Howe, 1975, Scott, 1986). Wildfire suppression practices undoubtedly contributed to the spread of non-native vegetation in the area, thereby 'choking out' native low-growing annual plants (John Emmel, pers. comm.). The combination of these and possibly other anthropogenic disturbances may have had devastating effects on native wildflowers in the area, including the UFB's host plant, a violet.

#### **Comstock's Blue (*Euphilotes battoides comstocki*)**

The *Euphilotes battoides* complex includes five seasonal biotypes or semispecies, each using different larval host plants (Emmel, 1998). Comstock's blue is a member of the *battoides* group, which utilizes *Eriogonum umbellatum* as a larval host plant. Shields described Comstock's blue in 1975 from a population found near Tehachapi in Kern County, California. Arnold (1999) reports that this subspecies has also been documented from the Piute Mountains and along the Old Ridge Route in Los Angeles County.

Comstock's blue co-occurs and is synchronic with the very similarly marked and widespread Bernardino blue (*Euphilotes bernardino*) in Kern County, which is strongly associated with its larval host plant, *Eriogonum fasciculatum*. Both butterflies can be found in the summer months from mid-June to late July. Distinguishing the two butterflies in the field when not found in association with their larval host plants can be difficult, although *E. battoides comstocki* is generally larger and the females have slightly more orange on the dorsal hind wing surface than *E. bernardino*.

#### **Veined Blue (*Icaricia neurona*)**

This small, orange-veined blue butterfly is uncommon but widely distributed from the southern Sierra Nevada to the Tehachapi Mountains and Mount Pinos region, and east along the San Gabriel and San Bernardino mountains (Emmel and Emmel, 1973). This butterfly is usually found flying close to the ground in association with its prostrate larval host plant, *Eriogonum*

*wrightii*, at elevations ranging from 4000 to 8000 feet. Adults are present from about mid-May to mid-August and may be double-brooded at some locations.

**Green (=Skinner's) Blue (*Icaricia lupini chlorina*)**

In southern California, *Icaricia lupini* is widely distributed from San Luis Obispo to San Diego County, and occurs throughout chaparral habitats up to 6000 feet elevation. Skinner's Blue occurs in the Tehachapi and Tejon ranges, and differs from other surrounding *lupini* populations (i.e. subspecies *monticola*) in having a distinctly green cast where other populations have a cyanic blue coloration.

Skinner's blue flies from May to July, and utilizes various species of *Eriogonum* (principally *E. fasciculatum*) as its larval host plant. *Icaricia lupini* is similar to the sympatric acmon blue (*Icaricia acmon*), but is generally larger and paler in coloration.

**Bright Blue Copper (*Lycaena heteronea clara*)**

The bright blue copper has been recently separated into six regionally defined subspecies, ranging from the higher mountains of California eastward through the Great Basin and into the Rocky Mountain region (Emmel, 1998). Four of these subspecies (including nominotypical *heteronea*) occur in California. In the transverse ranges of southern California, subspecies *clara* occurs in scattered montane meadows in the Tehachapi Mountains from Fort Tejon to Mount Pinos in Los Angeles, Kern, and Ventura counties.

This subspecies is known for its bright blue coloration in the males, and increased development of blue scaling dorsally in the females. This subspecies is rare and localized, and adults are present from late June through early August. Males are frequently observed perching and/or exhibiting territorial behavior on great basin sage (*Artemisia tridentata*), but females are usually only observed in association with their *Eriogonum* larval host plants. In southern California, subspecies *clara* utilizes *Eriogonum umbellatum* and/or *E. fasciculatum* as larval host plants. Emmel and Emmel (1973) also reported *E. nudum* as a possible host in the transverse ranges, but this has not been verified.

**Monarch Butterfly (*Danaus plexippus*)**

The widespread monarch butterfly can be observed throughout southern California in the coastal, lowland, and foothill areas, and occasionally in desert and mountain areas where it larval host plant, various milkweeds (genus *Asclepias*), occurs. Monarchs are renowned migrants, and large numbers can be observed along the California coast in the fall months as they migrate to overwintering sites along the California coast and into Mexico. A few California sites (e.g. Pacific Grove) support great concentrated numbers of the overwintering adults on trees; usually the adults hibernate as scattered individuals or in small clusters (Emmel and Emmel, 1973).

Although the butterfly may be getting less abundant due to land conversion and loss of larval host plant resources throughout its range, populations of this butterfly appear to be stable. However, existing and some potential overwintering sites along the southern California coast containing large trees (primarily Eucalyptus and/or Pines) are considered important for the long-term survival of western United States populations.

**Methods**

Guy Bruyey visited the Young Nak site on July 13, 2003. Date and times of the survey visit, weather conditions at the start and end of the survey, and survey results are summarized in **Table 2**.

**Table 2.**

Young Nak Site Butterfly Survey Information  
July 2003

Date	Time	Weather	Wind	Biologists	Results
7/13	0830-1630	Sunny, 61-77 °F	0-1	GB	No sensitive species observed

This survey primarily consisted of determining the presence or absence of SEB, TMS, UFB, and their associated host plants. Special consideration was given to areas containing native vegetation that may support specific larval host plant habitat requirements for any of the aforementioned sensitive butterflies. The presence or absence of invasive, non-native plant species was noted in an effort to assess the level of previous anthropogenic disturbance in a given area. Other habitat requirements including the presence of potential nectar resources and the overall quality of the site as it pertains to potential topographical resources (i.e., hilltops) were assessed.

Guy Bruyey surveyed the site on foot by conducting a series of transects across portions of the subject property where possible, stopping periodically for observations and notations. Field notes were taken at the time of this survey and were recorded on Guy Bruyey's site assessment form. This field survey was conducted on a sunny day with seasonal temperatures generally considered suitable for butterfly activity.

Guy Bruyey identified all butterfly species in the field. Other wildlife species (including other invertebrates) were identified in the field or later identified using various texts.

**Survey Limitations**

The present survey was conducted during one site visit in July 2003. Not all butterfly or insect species that may have been present on site were necessarily observable (or identified) during this survey. For an exhaustive assessment of the butterfly and/or insect fauna of a given area, surveys are required throughout the year (especially March to October) to achieve a complete inventory. Guy Bruyey's general knowledge of the butterfly diversity for this area was utilized in an effort to locate specific habitats for some butterfly species. A California Natural Diversity Database (CNDDDB) records search was conducted by ISI prior to the start of this survey to determine the probability that sensitive butterfly species may be present on the site.

Most of the current insect survey was performed during daylight hours, so many nocturnal insect species with a probability of occurrence were not directly observed. In addition, this survey did not involve various passive trapping methods (such as malaise or pitfall traps). Guy Bruyey utilized his general knowledge of insect resources for this area in an effort to determine the probability of occurrence for some sensitive butterfly species.

**Literature Review**

Nomenclature primarily used in this report comes from Hickman (1993) for plants; Emmel and Emmel (1973), Howe (1975), and Emmel (1998) for butterflies; and Hogue (1974), and Arnett (2000) for insects. Additional resources may be found at the end of this report.

**Site Description**

On site and adjacent land use varies considerably, and includes anthropogenic disturbances such as ranches, camps, transmission lines, paved and unimproved roads, and other developments. Other disturbances associated with off-road vehicle use, illegal dumping, target shooting, and grazing were observed. Much of the northeastern portion of the property is highly disturbed and is currently used in operations related to the Young Nak Retreat Center. A paved

driveway, parking lots, office buildings, and several dormitory-like structures are present on the site. During this study, many students were observed using hiking trails throughout the site. Less disturbed areas are present adjacent to or within portions of the survey area, and include vegetation communities such as oak woodland, chaparral, great basin scrub, native and non-native grassland, and riparian areas. These native habitats vary in quality and some contain various anthropogenic disturbances, mostly in the form of invasive, non-native grasses and other weedy vegetation.

Topographically, gently to steeply sloping hills, low-relief canyons and flat areas characterize the Young Nak site with a general reduction in elevation from the southern portions of the site to the northern areas of the property within Pine Canyon. The Young Nak property contains a combined maximum vertical relief of roughly 370 feet between its highest and lowest on-site elevation points. Elevations on the site range from approximately 3880 to 4250 feet above mean sea level.

## Results

### Sensitive Butterfly Species

Due to several early winter storms and average seasonal temperatures in the late winter and early spring months of 2003, many spring annual plant species responded favorably resulting in a better emergence pattern for most southern California butterflies, although population densities were probably low for many species due to atypically dry conditions from 2000 to 2002. It may take several years for some butterfly populations to return to pre-drought levels.

Portions of the subject property contains areas of previous disturbance associated with the Young Nak Retreat Center, including existing roads, buildings, parking areas, and the introduction of non-native grasses and other exotic vegetation. The present study indicates that the property does not currently appear to contain high quality potential habitat for SEB, TMS and/or UFB. For SEB this is based on the absence of its principal host plant, four-wing saltbush. No other *Atriplex* species were observed during this study. For TMS and UFB this is primarily based on the absence of violets, various anthropogenic disturbances observed on the subject property and in adjacent areas, and the presence of invasive non-native vegetation. Due to the presence of invasive non-native grasses (mostly *Bromus*) and other weedy species (i.e., *Erodium* species), violets are now probably uncommon in the general region. However, ISI botanists have identified mountain violet (*Viola purpurea* ssp. *quercetorum*), a potential TMS and/or UFB larval host plant, as occurring approximately 10 miles northwest of the subject property near Sandberg (ISI, 2002).

It is Guy Bruyey's understanding that no recent or historical data indicates that occupied habitat exists on any portion of the Young Nak property for TMS or SEB. TMS is typically found at higher elevations than are present on the site. Historical data for the presumed extinct UFB exists from the Sandberg area and at other locations (including Liebre Gulch) along the Old Ridge Route approximately ten to twelve miles west of the site, but this butterfly has not been observed since the late 1950's and is most likely not currently present. This is based on the results of the present study, and consultation with other lepidopterists (including John Emmel) that have searched for this rare butterfly in the general area since the late 1950's.

No Comstock's blue were observed during the present study. In addition, Guy Bruyey did not observe its principal larval host plant, *Eriogonum umbellatum*, as being present on the site. Based on the absence of its larval host plant, Comstock's blue is likely not present on the site. The similarly marked but much more widespread Bernardino blue is expected to occur on the site based on the presence of California buckwheat (*Eriogonum fasciculatum*).

No veined blues were observed during the present study, and this species is likely not present on or adjacent to the subject property based primarily on the absence of its larval host plant, *Eriogonum wrightii*. In addition, populations of this butterfly typically inhabit elevations ranging from 4000 to 8000 feet, indicating that much of the subject property is below the elevational requirements for this species.

Skinner's blue may or may not occur on the Young Nak site. Populations of this butterfly are known from the Tejon and Tehachapi ranges. Emmel and Emmel (1973) lists the widespread *Icaricia lupini monticola* as occurring along the Old Ridge Route in Los Angeles County, which is located approximately 12 miles west of the subject property. No *lupini* were observed during the present study, but several potential larval host plants (*Eriogonum* species) are present, indicating a moderate to high probability for *lupini* (either subspecies *monticola* or *chlorina*) to occur on the site.

No bright blue coppers were observed during the present survey. This species is typically localized and occurs where its larval host plant, *Eriogonum fasciculatum* or *E. umbellatum* is found, especially in association with *Artemesia tridentata*, where males frequently perch. Large colonies of this butterfly are found near Lebec and Frazier Park, approximately 20 miles northwest of the site. Although this butterfly may not occur on the site based on the results of this study, additional surveys of great basin scrub habitat in the immediate region may locate other isolated colonies of this uncommon butterfly.

Individual monarch butterflies may occasionally be found on the subject property, and several were observed during the present survey. California milkweed (*Asclepias californica*) is present on the subject property, and would be available as a potential oviposition site for passing females. Based on the site's location away from coastal areas, it is highly unlikely that the site would be utilized by large numbers of overwintering monarch adults.

#### **Other Lepidoptera Observations**

Butterfly activity and diversity was relatively average at the Young Nak site in 2003, with a total of 19 butterfly species observed during the present study. Butterfly species commonly observed during this study included painted lady (*Vanessa cardui*), west coast lady (*Vanessa annabella*), buckeye (*Junonia coenia*), cabbage white (*Artogeia rapae*), checkered white (*Pontia protodice*), and alfalfa sulfur (*Colias eurytheme*). Other butterflies observed included western tiger swallowtail (*Papilio rutulus*), pale swallowtail (*Papilio eurymedon*), California sister (*Adelphia bredowii californica*), mourning cloak (*Nymphalis antiopa*), red admiral (*Vanessa atalanta*), acmon blue (*Icaricia acmon*), marine blue (*Leptotes marina*), large white skipper (*Heliopetes ericetorum*), and funereal duskywing (*Erynnis funeralis*). Several other butterfly species were observed and are listed in Appendix A.

Additional butterfly species are expected to occur on the site that were not observed during the present study due to seasonal restrictions and other factors. A list of butterfly species with potential for occurrence, based on the vegetation present, the site's location, and other factors, is included as part of this report (Appendix A). Guy Bruyey believes that topographic features of the Young Nak site are utilized as resources for hilltopping butterfly species in the area. However, hilltops and ridgelines containing significantly more topographic relief are present adjacent to the subject property and are probably more widely utilized as hilltopping resources for butterfly species in the general vicinity.

#### **Nectar Resources**

Most of the Young Nak property contains flowering plants known (or potentially suitable) as nectar resources for butterflies. Guy Bruyey observed butterflies nectaring on several plants including (but not limited to) golden yarrow (*Eriophyllum confertiflorum*), California buckwheat

(*Eriogonum fasciculatum*), wild heliotrope (*Heliotropium curassavicum*), thistle (*Cirsium* species), narrow-leaved milkweed (*Asclepias fascicularis*), California milkweed (*Asclepias californica*), and Indian clover (*Lotus purshianus*). Several additional butterfly nectar resources are expected to occur on site but were not in bloom due to season.

#### **Other Insect Observations**

No sensitive insect species were observed during this study.

#### **Other Sensitive Resources**

No other sensitive wildlife resources were observed during this study.

#### **Conclusion**

During the one-day survey period, most of the Young Nak site (away from Retreat Center operations) was specifically surveyed for the sensitive butterfly species and their associated larval host plants named above. In addition, a general butterfly inventory (both observed and expected to occur) was performed. Based on seasonal precipitation patterns in the late winter and spring months of 2003, butterfly activity was considered relatively 'productive' for most species based on the results of the present study and other butterfly surveys conducted in the region.

Based on these observations and other information presented in the above report, it can be reasonably concluded that the sensitive (species of concern) butterfly species addressed herein are not currently present on the subject property. Most narrow-endemic butterfly species discussed above are likely not present based on the results of the present study. Several Lycaenid butterflies, including Comstock's blue, Skinner's blue, and Bright Blue Copper may have a low potential for occurrence on the subject property based on known ranges and the presence of potential larval host plants. None of these species were observed during the present study.

Although various site disturbances and the lack of UFB observations for nearly 45 years make its rediscovery unlikely, continued searches for this extinct butterfly are encouraged in the general area of the subject property and along the Old Ridge Route in the Sandberg and Leibre Gulch areas where its larval host plant still occurs.

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Mr. Phillips:

If I can be of any further assistance regarding this project and report, please do not hesitate to contact me.

Sincerely,  
Brueya Biological Consulting

Guy P. Brueya  
Entomologist / Principal Biologist

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**Appendix A**  
 Butterfly Species with potential for occurrence on the **Young Nak** Project Site  
 Los Angeles County, California (N=84)

Observed butterfly species (N=19) are indicated with an asterisk. Two asterisks indicate special status and/or narrow-endemic species. Butterfly species included on this list have varying degrees of potential for occurrence on the subject property. Potential for occurrence is based on a combination of known range (historical and present), host plant presence/absence, and other factors. Not all butterfly species that may be resident on the site were necessarily observed during this survey. For an exhaustive butterfly assessment, surveys are best performed from March to October to achieve a thorough inventory.

Abundance rating is for **general region** only (northwestern Los Angeles and southern Kern counties). C=Common, LC=Locally Common, O=Occasional, R=Rare, S=Stray, X=Extinct

<u>Family / Scientific Name</u>	<u>Common Name</u>	<u>Abundance</u>
Order Lepidoptera	Butterflies and Moths	
<b>Papilionidae</b>	<b>Swallowtails</b>	
<i>Papilio cresphontes</i>	Giant Swallowtail	S
<i>Papilio eurymedon</i>	Pale Swallowtail*	C
<i>Papilio multicaudatus</i>	Two-tailed Swallowtail	R
<i>Papilio rutulus</i>	Western Tiger Swallowtail*	C
<i>Papilio zelicaon</i>	Anise Swallowtail	C
<b>Nymphalidae</b>	<b>Brush-footed Butterflies</b>	
<i>Adelphia bredowii californica</i>	California Sister*	C
<i>Agraulis vanillae incarnata</i>	Gulf Fritillary	S
<i>Basilarchia lorquini</i>	Lorquin's Admiral*	C
<i>Cenonympha tullia californica</i>	California Ringlet*	O
<i>Cercyonis sthenele sylvestris</i>	Sylvan Satyr	O
<i>Charidryas gabbii</i>	Gabb's Checkerspot	LC
<i>Danaus gilippus</i>	Striated Queen*	O
<i>Danaus plexippus</i>	Monarch*	C
<i>Euphydryas chalcedona chalcedona</i>	Chalcedon Checkerspot	LC
<i>Euphydryas editha ehrlichi</i>	Ehrlich's Checkerspot	R
<i>Junonia coenia</i>	Buckeye Butterfly*	C
<i>Nymphalis californica</i>	California Tortoise-shell	O
<i>Nymphalis milberti</i>	Milbert's Tortoise-shell	O
<i>Nymphalis antiopa</i>	Mourning Cloak*	C
<i>Phyciodes mylitta</i>	Mylitta Crescent	O
<i>Polygonia satyrus</i>	Satyr Anglewing	O
<i>Speyeria adiastra atossa</i> <sup>1</sup>	Unsilvered Fritillary**	X
<i>Speyeria callippe macaria</i>	Macaria Fritillary	LC
<i>Speyeria coronis hennei</i>	Henne's Fritillary	LC

<u>Family / Scientific Name</u>	<u>Common Name</u>	<u>Abundance</u>
Order Lepidoptera	Butterflies and Moths	
<b>Nymphalidae</b>	<b>Brush-footed Butterflies (Cont'd)</b>	
<i>Speyeria egleis tehachapina</i>	Tehachapi Mtn. Silverspot	R
<i>Thessalia leanira</i>	Leanira Checkerspot	R
<i>Vanessa annabella</i>	West Coast Lady*	C
<i>Vanessa atalanta</i>	Red Admiral*	C
<i>Vanessa cardui</i>	Painted Lady*	C
<i>Vanessa virginiensis</i>	Virginia Lady	C
<b>Pieridae</b>	<b>Whites and Sulfurs</b>	
<i>Anthocharis cethura</i>	Felder's Orange-tip	LC
<i>Anthocharis sara sara</i>	Sara Orange-tip	C
<i>Anthocharis lanceolata australis</i>	Grinnell's Marble	R
<i>Artogeia rapae</i>	Cabbage White*	C
<i>Colias (Zerene) eurydice</i>	California Dogface	LC
<i>Colias (Zerene) cesonia</i>	Southern Dogface	S
<i>Colias eurytheme</i>	Alfalfa Sulfur*	C
<i>Colias alexandra harfordii</i>	Harford's Sulfur	LC
<i>Euchloe hyantis (Lebec segregate?)</i>	Southern Marble	LC
<i>Eurema nicippe</i>	Nicippe Yellow	O
<i>Eurema mexicana</i>	Mexican Yellow	S
<i>Nathalis iole</i>	Dwarf Yellow	LC
<i>Phoebis sennae</i>	Cloudless Sulfur	R
<i>Pontia beckeri</i>	Becker's White	LC
<i>Pontia protodice</i>	Checkered White*	C
<i>Pontia sisymbrii sisymbrii</i>	Spring White	LC
<b>Lycaenidae</b>	<b>Blue, Hairstreaks, Coppers</b>	
<i>Atlides halesus</i>	Great Purple Hairstreak	O
<i>Brephidium exilis</i>	Pigmy Blue	C
<i>Callophrys perplexa</i>	Bramble Hairstreak	C
<i>Celestrina ladon echo</i>	Echo Blue	LC
<i>Euphilotes bernardino</i>	Bernardino Blue	LC
<i>Euphilotes battoides comstocki</i>	Comstock's Blue**	R
<i>Euphilotes enoptes</i>	Pacific-dotted Blue	LC
<i>Everes amyntula</i>	Western Tailed-blue	LC
<i>Glaucopteryx lygdamus australis</i>	Southern Blue	C
<i>Glaucopteryx piasus</i>	Arrowhead Blue	R
<i>Habrodais grunus</i>	Golden Hairstreak	LC
<i>Hemiargus ceraunus gyas</i>	Edward's Blue	R
<i>Icaricia acmon</i>	Acmon Blue*	C
<i>Icaricia lupini monticola</i>	Green Blue**	C

<u>Family / Scientific Name</u>	<u>Common Name</u>	<u>Abundance</u>
Order Lepidoptera	Butterflies and Moths	
<b>Lycaenidae</b>	<b>Blue, Hairstreaks, Coppers (Cont'd)</b>	
<i>Icaricia icarioides evius</i>	Evius Blue	LC
<i>Incisalia augustinus iroides</i>	Western Elfin	C
<i>Leptotes marina</i>	Marine Blue*	C
<i>Lycaeides melissa</i>	Melissa Blue	LC
<i>Lycaena xanthoides</i>	Great Copper	LC
<i>Lycaena helloides</i>	Purplish Copper	LC
<i>Lycaena gorgon</i>	Gorgon Copper	R
<i>Lycaena heteronea clara</i>	Bright Blue Copper**	LC
<i>Satyrium behrii</i>	Behr's Hairstreak	LC
<i>Satyrium californica</i>	California Hairstreak	O
<i>Satyrium sylvinus</i>	Sylvan Hairstreak	O
<i>Strymon melinus</i>	Common Hairstreak	C
<b>Riodinidae</b>	<b>Metalmarks</b>	
<i>Apodemia mormo</i>	Mormon Metalmark	C
<b>Hesperiidae</b>	<b>Skippers</b>	
<i>Atalopedes campestris</i>	Field Skipper	C
<i>Copaeodes aurantiaca</i>	Hewitson's Skipperling	O
<i>Epargyreus clara</i>	Silver-spotted Skipper	S
<i>Erynnis brizo lacustra</i>	Lacustra Skipper	R
<i>Erynnis funeralis</i>	Funereal Duskywing	C
<i>Erynnis tristis</i>	Mourning Duskywing*	C
<i>Erynnis propertius</i>	Propertius Duskywing	O
<i>Heliopetes ericetorum</i>	Large White Skipper*	C
<i>Hesperia columbia</i>	Columbia Skipper	R
<i>Hesperia comma tildeni</i>	Western Branded Skipper	LC
<i>Hesperia juba</i>	Juba Skipper	LC
<i>Hesperia lindseyi</i>	Lindsey's Skipper	LC
<i>Hylephila phyleus</i>	Fiery Skipper	C
<i>Lerodea eufala</i>	Eufala Skipper	O
<i>Ochlodes agricola</i>	Rural Skipper	O
<i>Paratrytone melane</i>	Umber Skipper	O
<i>Pyrgus albescens</i>	Western Checkered Skipper	C
<i>Pyrgus scriptura</i>	Small Checkered Skipper	R
<i>Polites sabuleti</i>	Sandhill Skipper	LC
<i>Thorybes pylades indistictus</i>	Northern Cloudywing	O



# **Jurisdictional Delineation: Waters of the United States and Streambeds**

**Young Nak Retreat Center  
Los Angeles County, California**

**Prepared For:**

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**January 3, 2005**

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# **Jurisdictional Delineation: Waters of the United States and Streambeds**

**Young Nak Retreat Center  
Los Angeles County, California**

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## **INTRODUCTION**

This jurisdictional delineation report documents the findings of field investigations by Impact Sciences, Inc. while delineating the extent of waters of the United States, including wetlands, under federal jurisdiction, and streambeds under California Department of Fish and Game's jurisdiction on the Young Nak Retreat Center site. The property is located in the extreme northern part of Los Angeles County, adjacent to the north side of Angeles National Forest. The Young Nak site is 29 acres, specifically located at 24100 Pine Canyon Road, Lake Hughes, California (**Figure 1, Project Site Location**).

While conducting the delineation, Impact Sciences investigated hydrology, soils, vegetation, ordinary high water marks, stream banks, and riparian vegetation. Figures detailing the findings are included throughout this report.

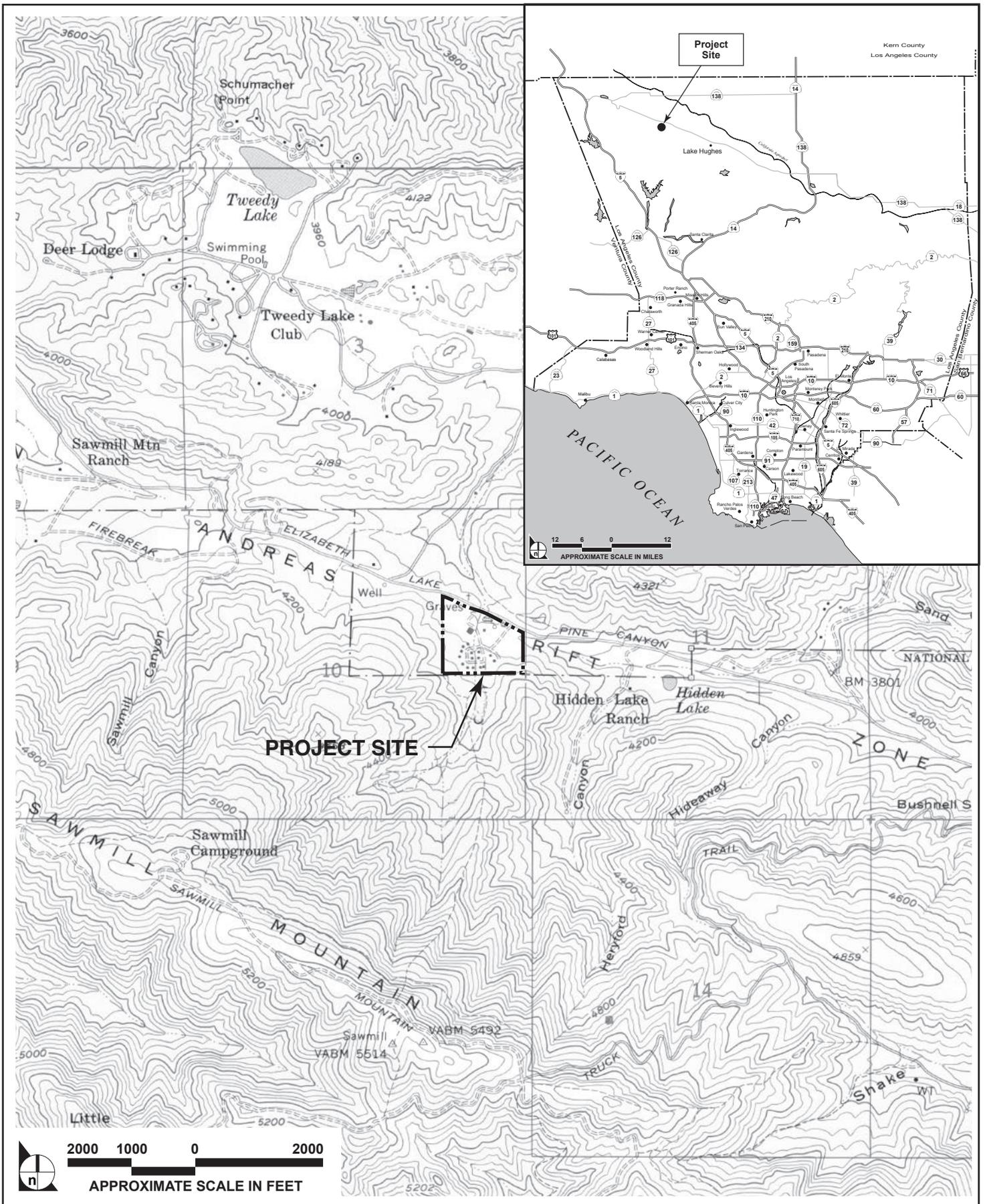
## **Project Description**

This jurisdictional delineation is prepared to assist in the land use planning for the Young Nak Retreat Center, and for use by regulatory agencies in reviewing the project's jurisdictional status and permitting requirements.

## **Regulatory Framework/Regulatory Agencies**

### ***U.S. Army Corps of Engineers (ACOE)***

Federal regulations of "Waters of the United States" stem from Section 10 of the Federal Rivers and Harbors Act of 1899, enacted to regulate activities within navigable waters. In 1972, the Federal Clean Water Act was passed. This Act regulates discharges into "Waters of the United States." Section 404 of this act regulates activities including fills placed into wetlands that are adjacent to navigable waters.



SOURCE: Impact Sciences, Inc. – December 2004

FIGURE 1

Waters of the United States are defined in 33 CFR 328.3:

(a) Waters of the United States means

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- All interstate waters including interstate wetlands;
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters;
- Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
- From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
- Which are used or could be used for industrial purpose by industries in interstate commerce;
- All impoundments of waters otherwise defined as waters of the United States under the definition;
- Tributaries of waters identified in paragraphs (a) (1) through (4) of this section;
- The territorial seas;
- Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1) through (6) of this section.

ACOE jurisdiction in non-tidal waters typically extends to the ordinary high water mark (OHWM). The OHWM for intermittent streams, for example, can be determined by “the fluctuations of water as indicated by physical characteristics such as clear, natural lines impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas” (33 CFR 328.3(e)). In arid areas of the southwest, the OHWM may occur at a lower level than where the typical physical indicators are present, due to unusually high flows, not occurring on a typical annual cycle. (Allen, et al., 2001)

In 1976, the United States Army Corps of Engineers (ACOE) and the Environmental Protection Agency (EPA) adopted a regulatory definition, which states that wetlands are:

*“Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.” (33 Code of Federal Regulations 328.3)*

In 1987, the ACOE published the “Corps of Engineers Wetland Delineation Manual” which is used to determine the extent of their jurisdiction in wetlands. Subsequently, additional guidance documents have been issued by the ACOE, which further clarify the use of the 1987 Manual.

The U.S. Supreme Court, in a 2001 opinion, found that wetlands and waters that are isolated from navigable waters, should not be considered jurisdictional “waters of the U.S.” if the basis for jurisdiction is use of the waters by migratory birds. The Court held that the use by migratory birds did not constitute sufficient reason to regulate these wetlands. However, if waters can be shown to have other uses that constitute sufficient interstate commerce use, then the water might constitute a “water of the United States.” This determination shall be made independently of procedures described in the Corps’ manual. The Supreme Court decision was made based on the jurisdiction of the waters and not on the methods used to delineate waters. A site-specific evaluation of the ACOE’s jurisdiction is generally required.

Most impacts to areas delineated as “waters of the U.S.,” if determined to be jurisdictional by the ACOE, requires approval under the authority of the Clean Water Act and its implementing regulations.

#### **Section 404 Permits**

The deposition of fill to an area delineated as “waters of the U.S.” including wetlands, and determined to be under the ACOE jurisdiction require a permit or other approval by ACOE Regulatory Branch. Fill is broadly defined to include most materials (rock, soil, pilings, concrete, wood, some incidental fallback of soil from earth-moving equipment, and in some cases additional water) that can be discharged into a water or wetland.

Most Section 404 permits require mitigation for reducing overall impacts to net wetland area and functions.

#### ***California Department of Fish and Game (CDFG)***

The State of California regulates water resources under Sections 1600 to 1603 of the Fish and Game Code of California. Section 1603 mandates that

*“It is unlawful for any person to divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the department, or use any material from the streambeds, without first notifying the department of that activity.”*

CDFG considers most natural drainages to be streambeds unless it can be demonstrated otherwise. Streambeds are defined in the California State Register (Vol. 87, No. 9, Section 1.72) as follows:

*“A stream is a body of water that follows at least periodically or intermittently through a bed or channel having banks and that support fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation.”*

CDFG jurisdiction includes ephemeral, intermittent, and perennial watercourses, and is often extended to the limit of riparian habitats that are located contiguous to the water resource and that function as part of the watercourse system. Section 2785(e) of the Fish and Game Code of California states

*“Riparian habitat means lands which contain habitat which grows close to and which depends on soil moisture from a nearby freshwater source.”*

### **Streambed Alteration Agreements**

Any project that impacts CDFG jurisdictional areas, including fills, vegetation removal, or bridging, requires a Section 1600 Streambed Alteration Agreement from CDFG. Much of the same information (project description, potential impacts, mitigation measures) necessary to apply for ACOE Section 404 permits is required for the Streambed Alteration Agreement application.

### ***Regional Water Quality Control Board (RWQCB)***

Section 401 of the federal Clean Water Act authorizes the State of California to certify federal permits and licenses. The State’s implementing regulations to conduct certifications are codified under the California Code of Regulations Title 23 Waters, Sections 3830 – 3869. Projects qualifying for an ACOE Section 404 permit must submit materials for review to the appropriate RWQCB and request a Section 401 certification. Much of the same information (project description, potential impacts, mitigation measures) necessary to apply for ACOE Section 404 and CDFG Section 1602 permits is required for the Section 401 Certification.

The RWQCB also regulates “isolated waters,” or those removed from the Corps’ jurisdiction by the Supreme Court’s SWANCC decision, under California’s Porter Cologne Act, which requires a discharge permit for materials placed into such waters.

## **METHODOLOGY**

In order to evaluate the extent of ACOE and CDFG jurisdiction on the Centennial project site, a literature search and jurisdictional delineation was conducted by Impact Sciences. All available literature describing biological, soil and hydrologic resources within the vicinity of the site, relevant to the jurisdictional determination was examined prior to the field study. The literature examined for this report includes:

- Soil Survey Antelope Valley Area, California (USDA, 1970);
- The Jepson Manual: Higher Plants of California; and
- National List of Plant Species that occur in California, Region 10 – California.

On August 3, 2004, Impact Sciences biologists conducted the delineation on the site using the Corps' 1987 Manual, and visual observations of the Ordinary High Water Mark (OHWM), shoreline banks, soils, hydrology, and vegetation were used to determine the extent of ACOE and CDFG jurisdiction. Data was gathered at various sample points documenting hydrology, soils, and vegetation. The Data Sheets are summarized in the Discussion of Findings section.

### **GPS Mapping**

The jurisdictional boundaries were determined and mapped using a Trimble Pathfinder Pro XR/XRS Global Positioning Unit (GPS) with an accuracy of under one meter. Waters/Wetland boundaries, as determined by the definition of "Waters of the United States" as defined above by the *Corps of Engineers Wetland Delineation Manual* (1987), and stream corridors were mapped. Riparian vegetation, which is regulated by CDFG, was generally not mapped in the field if the outer limit of the vegetation could be determined from aerial photography. Where aerial photography was not sufficient to determine CDFG limits, riparian vegetation was mapped. The CDFG Streambed limits of the riparian vegetation were subsequently mapped using both the GPS mapping and aerial photography.

Mapping was accomplished by recording point locations along the jurisdictional boundaries of both sides of streams, or at the edge of the either adjacent or isolated wetlands.

## **SITE DESCRIPTION**

The project site is generally located in the northwestern portion of Los Angeles County. Located on the site are several mobile home units, one permanent single-family dwelling and a detached laundry/restroom. It is currently used as a religious retreat facility. The project is located within the Significant Ecological Area #58, as noted within the Los Angeles County Significant Ecological Area Study report produced in 1976, and consists of grassy or meadow areas with oak trees and other mixed trees on the slopes around the perimeter. The project site is bordered on the north by Pine Canyon Road, on the south by the Angeles National Forest and on the east and west by private property.

### **Topography**

The project site occurs within a rift zone created by the San Andreas Fault along the foothills of Sawmill Mountain. The site topography is variable and ranges from approximately 4,020 feet above mean sea level along the northern boundary of the site to approximately 4,200 feet at the southwest corner. The central portion of the site is essentially flat and gently sloping downward to the north, while steeper slopes exist on the east and western perimeter.

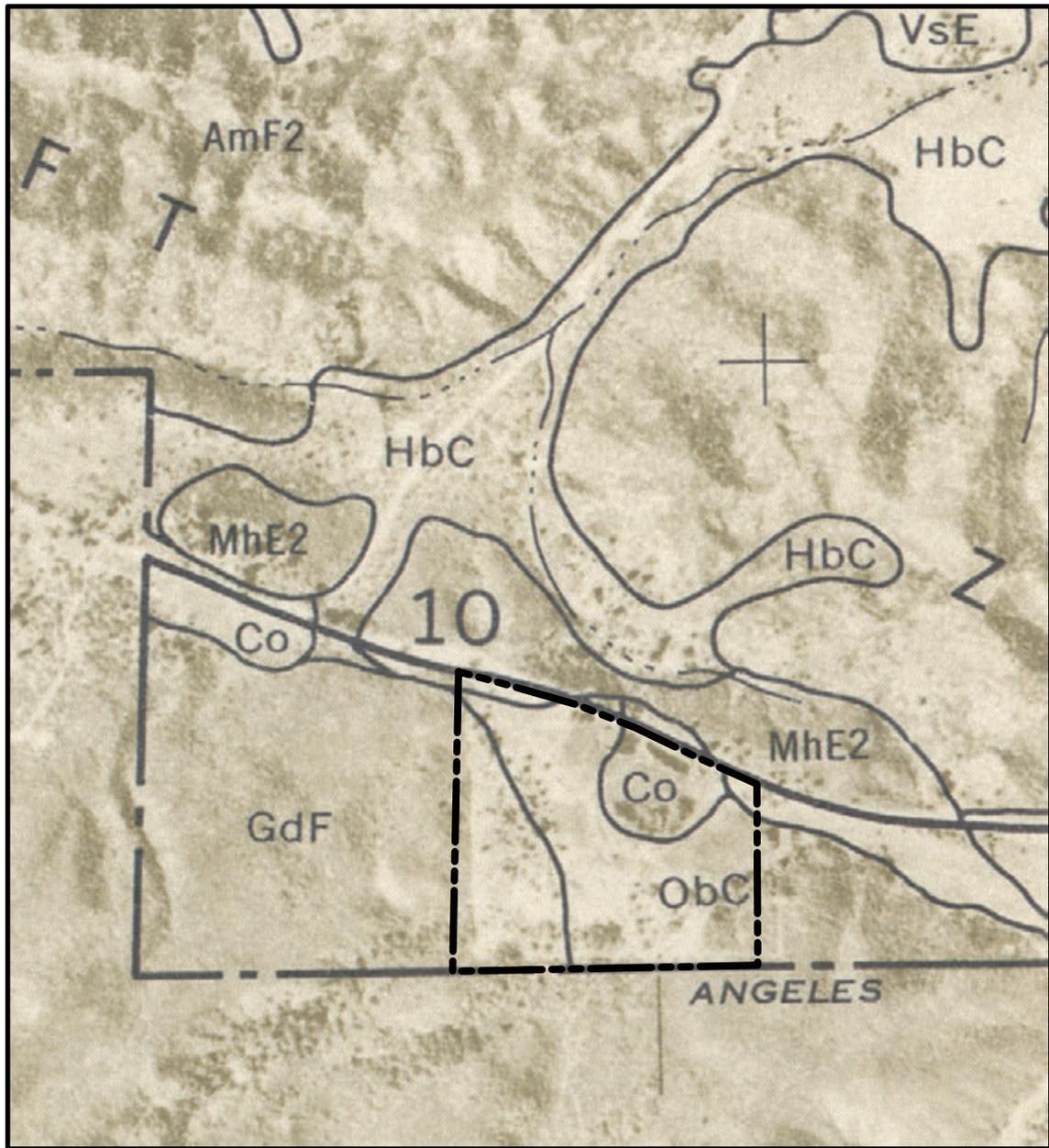
### ***Hydrology***

Hydrology for the stream and wetlands is from ground water discharge or from runoff from the adjacent Pine Canyon Road and the impervious surfaces in the existing facilities. Two sag ponds associated with the San Andreas Fault are present on the north side of the site and while not having a surface connection, appear to have a hydrological connection to a "blueline" stream with its headwaters immediately to the east of the sag ponds and flowing to the east. The stream and wetlands have seasonal ground and surface waters, sufficient to support riparian and hydrophytic vegetation.

The USGS Quad shows an additional blueline drainage flowing from south to north through the property although no such drainage exists on the site.

### ***Soils***

Wetlands have hydric soils. These soils are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions (a condition where no free oxygen is present). Typical field indicators of hydric soils are the presence of thick organic layers, or in the case of predominantly mineral soils, a low chroma matrix (gray color) and/or bright mottling (**Figure 2, Soils**).



**Legend:**

- GdF - Godde Rocky Loam
- ObC - Oak Glen Sandy Loam
- MhE2 - Millsholm Rocky Loam
- Co - Chino Loam



SOURCE: USDA Soil Conservation Service - January 1970

FIGURE 2

On-site soils are as mapped by the Soil Conservation Service (1970), According to the Los Angeles Area soil survey, three soil types can be found on the project site: Chino loam, Oak Glen Sandy loam and Millsholm rocky loam. The Chino loam is a wet meadow soil that is a poorly drained mixed granitic alluvium. Oak Glen sandy loam is a well-drained granitic alluvium soil that is neutral to slightly acidic. Millsholm rocky loam is well-drained shale and fine sandstone with a neutral pH and low fertility. With the exception of the pond areas along Pine Canyon Road, the soils on the site are generally well drained granitic soils.

**Table 1**  
**On-Site Soils Associated with Waters and Streambeds, and their Hydrological Characteristics**

Mapped Soil	Soil Characteristics <i>Descriptive terms are defined in SCS soil surveys.</i>	Hydric (NRCS)
Chino loam (Co)	<ul style="list-style-type: none"> <li>▪ These soils are well drained.</li> <li>▪ Permeability is moderately slow.</li> <li>▪ Runoff is very slow with a no or slight hazard of erosion.</li> </ul>	Non-hydric
Millsholm rocky loam	<ul style="list-style-type: none"> <li>▪ These soils are somewhat poorly drained.</li> <li>▪ Permeability is moderate.</li> <li>▪ Runoff is very medium to rapid with a moderate to high hazard of erosion.</li> </ul>	Non-hydric
Oak Glen sandy loam (ObC)	<ul style="list-style-type: none"> <li>▪ These soils are well drained.</li> <li>▪ Permeability is moderately rapid.</li> <li>▪ Runoff is very slow to medium with a slow to medium hazard of erosion.</li> </ul>	Non-hydric

## Vegetation

The vegetation of the site includes a willow riparian corridor, oak woodland, oak/willow interface, chaparral, mixed grassland, and a pine/oak interface.

The willow riparian corridor is located along most of the northern portion of the site adjacent to Pine Canyon Road. Mature willow trees (*Salix* sp.) with valley oak (*Quercus lobata*) occurring occasionally throughout dominate this area. Two sag ponds also occur in this area with an understory vegetation composed of wet meadow species such as grasses (*Leymus condensatus* and *Phalaris minor*), rushes (*Juncus balticus*, *J. effusus*, and *J. xiphioides*), and sedges (*Schoenoplectus acutus*).

Oak woodlands composed of several species of oak (*Quercus* sp.) occur throughout the site. A stand of valley oaks occur in the center of the project site and dense stands of scrub oaks occur along the southern and western edge of the site. Numerous small oak trees are also located among buildings.

A small area of chaparral exists on site, dominated by chamise (*Adenostoma fasciculatum*) and scrub oak (*Quercus berberidifolia*). Several mature gray pine (*Pinus sabiniana*) are intermixed with oak trees is located immediately behind (south of) the main office for the facility.

## **DISCUSSION OF FINDINGS**

### **ACOE Waters of the United States and Wetland Areas (Section 404, Clean Water Act) and CDFG Streambeds (Sections 1600-1603, Fish and Game Code of California), and the Regional Water Quality Control Board (Porter-Cologne Act)**

The sag ponds and the associated stream corridor along the south side Pine Canyon Road and the adjacent wetlands have been delineated as jurisdictional under the ACOE, CDFG, and RWQCB's jurisdiction (5.12 acres). In addition, there are adjacent areas of riparian, but not hydrophytic, vegetation (6.08 acres) that are under the jurisdiction of CDFG, but not the ACOE or RWQCB. There are also a few small areas of isolated "patches" of rushes on the hillside under RWQCB jurisdiction (0.11 acre), which should not be considered adjacent to the riparian corridor due to their independent existence that is they are not dependent on the riparian corridor for water or supplying water to the corridor.

### **Functional Assessment**

All open space performs ecological functions. The degree to which these functions are performed depends on their physical (e.g., location, size, soils, available moisture, etc.) and biological (species dominance, composition, diversity, and spacing, etc.) characteristics. Examples of ecological functions include wildlife habitat, biofiltration, groundwater recharge, storm water attenuation, shoreline stabilization, and sediment trapping. Wetlands are particularly suited to provide a variety of functions because of their multifaceted interaction with both upland and open water areas. The diversity of functions associated with a particular wetland or stream is dependent on the physical and biological characteristics, as well as land and water uses which directly or indirectly affects it.

The riparian corridor and wetlands on the Young Nak site provide the opportunity for wildlife habitat and are wide enough to allow habitat that is not adjacent to the road corridor. This corridor provides opportunity for nesting habitat of riparian species, as well as upland species. Because of the proximity to Angeles National Forest, the ponded areas is likely to be of considerable importance to wildlife as a source of water. The adjacent wetlands provide fresh material for grazing animals well into the summer. Overall the riparian corridor and adjacent wetlands provide important habitat components for wildlife.

There are other functions associated with water quantity and quality performed by the riparian corridor and the adjacent wetlands; however, these are minimal due to the size and overall opportunities for this functions to be performed.

## **SUMMARY**

Streambeds and riparian corridors under the jurisdiction of the ACOE total 5.12 acres along the riparian corridor and the adjacent wetlands. CDFG jurisdiction totals (11.20 acres) consists of the entire riparian corridor, including the adjacent riparian woodland. RWQCB jurisdiction includes 5.23 acres, which include the ACOE jurisdiction and the isolated wetlands (**Figure 3, Jurisdictional Wetland Delineation**).

This jurisdictional delineation was conducted in accordance with the regulatory definition of Waters of the United States, the wetland definition including the 1987 manual, and the criteria of the Fish and Game Code. CDFG and RWQCB jurisdictions were delineated in accordance with the definitions and procedures of the respective agencies.

Coordination between Impact Sciences and the site planners is essential to ensure that regulatory and procedural changes have not occurred since agency concurrence with this report.

**PLEASE SEE FIGURE 8  
OF THE BIOLOGICAL CONSTRAINS ANALYSIS**

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**Peter H. Bloom**  
Zoologist

August 2, 2003

Ms. Jeff Johnson  
Impact Sciences, Inc.  
30343 Canwood Street, Suite 210  
Agoura Hills, CA 91301

Dear Jeff:

As requested, I completed four (2 diurnal, 2 nocturnal) U.S. Fish & Wildlife Service protocol California Red-legged Frog (*Rana aurora draytonii*) surveys on the +/- 30 acre "Lake Hughes - Young Nak" parcel in northeast Los Angeles County. As requested, I also conducted surveys for the Yellow-blotched Salamander, Tehachapi Slender Salamander, Western Spadefoot Toad, Arroyo Toad, Foothill Yellow-legged Frog, Mountain Yellow-legged Frog, Southwestern Pond Turtle, San Diego Horned Lizard, California Horned Lizard, Silvery Legless Lizard, and San Bernardino Ringneck Snake.

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Surveys were conducted on July 26<sup>th</sup>, 30<sup>th</sup>, 31<sup>th</sup> on days with clear skies, low wind, and temperatures ranging from 80 - 90 degrees. The topography consisted of steep rolling hills with one main drainage and several small drainages, the largest of which contained two perennial pools. The soil consisted mainly of decomposed granite. On-site habitats consisted of chaparral, non-native grassland, native grassland, and willow riparian. Common dominant plants included gray pine (*Pinus sabiniana*), valley oak (*Quercus lobata*), California scrub oak (*Q. berberidifolia*), Fremont cottonwood (*Populus fremontii*), willow (*Salix* spp.), coffee berry (*Rhamnus californica*), Mexican elderberry (*Sambucus mexicana*), chamise (*Adenostoma fasciculatum*), our Lord's candle (*Yucca whipplei*), big sage (*Artemisia tridentata*), flat-top buckwheat (*Eriogonum fasciculatum*), yerba santa (*Eriodictyon crassifolium*), skunkbush (*Rhus trilobata*), wild cucumber (*Marah macrocarpa*), and needlegrass (*Nassella* spp.).

Methods: I walked all of the drainages and hillsides evaluating habitat and visually surveying for amphibians and reptiles. This included flipping and immediately replacing boulders and logs that might provide appropriate habitat. Fourteen field hours were expended on-site.

Results: Several of the species that I surveyed for are extremely difficult to detect either because of their rarity, their secretive nature, or their seasonality. Hence, the fact that none were found doesn't necessarily mean they are not present, although for some I can say this with virtual certainty. No snakes were found, although one road-killed Southern Pacific Rattlesnake (*Crotalus viridis*) was found about 1 mile away. Observed on-site lizards included Western Fence Lizard (*Sceloporus occidentalis*), and Western Whiptail (*Cnemidophorus tigris*). Recently metamorphosed Pacific Tree Frogs (*Pseudacris regilla*) were the only on-site amphibians detected and were found in relatively low numbers. Introduced Mosquito Fish (*Gambusia affinis*) were present in both ponds.

California Red-legged Frog, Foothill Yellow-legged Frog, and Mountain Yellow-legged Frog - Although the habitat is superb, particularly for the California Red-legged Frog none were found during this survey. The on-site pools are perennial, deep, with considerable pond side vegetation, emergent plants and organic debris both in the water and on the banks. The habitat looked so good that I was actually surprised that Red-legged Frogs were not detected. Both the Foothill Yellow-legged Frog and Mountain Yellow-legged Frog prefer stream-side habitat and

probably do not occur in this general vicinity. The Mountain Yellow-legged Frog inhabits higher elevations. Although appropriate habitat no Bullfrogs (*R. catesbeiana*) or their larvae were observed.

**Yellow-blotched Salamander** - Prefers areas with considerable numbers of logs and moist areas. Unlikely to occur, but may occur on-site near the pools, wet meadow areas and north facing slopes. Known from localities further to the north.

**Tehachapi Slender Salamander** - Occurs in the Paiute Mountains south of the Sierra Nevada. Not known nor is it expected from this area.

**Western Spadefoot Toad** - Prefers grasslands with vernal pool situations or depressions that capture ephemeral waters. Unlikely that any breeding pools exist on-site.

**Arroyo Toad** - Inappropriate habitat, does not occur on-site.

**Southwestern Pond Turtle** - Appropriate habitat, but not detected.

**San Diego Horned Lizard & California Horned Lizard** - These two subspecies overlap in this region. Occurs in the general area but not detected on-site. Prefers open sandy areas. May be found in the chaparral areas of the site and may even be abundant post fire when the vegetation has been opened up.

**Silvery Legless Lizard** - Fossorial and very difficult to detect, may occur on-site in dry sandy substrates.

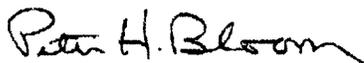
**San Bernardino Ringneck Snake** - Probably occurs in on-site in any habitat.

**Two-striped Garter Snake** - Good potential to occur on-site in any habitat, prefers moist areas.

Birds that were observed on-site include California Quail, Acorn Woodpecker, Red-shafted Flicker, Anna's Hummingbird, Common Raven, Western Scrub Jay, Ash-throated Flycatcher, Black Phoebe, Bewick's Wren, Oak Titmouse, Red-breasted Nuthatch, Northern Oriole, California Thrasher, Black-throated Grey Warbler, Black-headed Grosbeak, California Towhee, Bushtit, Wren-tit, Lesser Goldfinch, and House Finch. Observed mammals included Merriam Chipmunk, and Audubon Cottontail.

Should you have any questions please call. Thank you for the opportunity to work with you on this project.

Sincerely,



Peter H. Bloom





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**APPENDIX F**  
**Site Photographs**



SOURCE: Impact Sciences, Inc. – 2004









**APPENDIX G**  
**Resumes**

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## **Keith W. Babcock**

### *Managing Principal/Director of Biological Services*

Mr. Babcock is a Managing Principal and firm-wide Director of Biological Services at Impact Sciences, Inc., with over 18 years of experience in both wildlife biology and project management. He has directed, managed, or conducted a broad range of terrestrial wildlife research and studies, biological resource inventories, sensitive species surveys, environmental impact assessments, biological constraints analysis, habitat conservation/management plans, habitat restoration plans, and mitigation monitoring plans for a variety of private and public sector clients in virtually every major habitat type in California. Mr. Babcock has a thorough understanding of the California Environmental Quality Act, both State and Federal Endangered Species Acts, and state and federal regulations and permits involving biological resources. He has worked on over 250 environmental compliance projects, including EIRs, EISs, Section 10(a) permits, Habitat Conservation Plans, Section 7 consultations, Section 404 permits, and Streambed Alteration Agreements. His biological expertise includes knowledge of a wide range of terrestrial organisms and ecological relationships, with particular emphasis on general ornithology, raptors, threatened and endangered species, and wildlife movement corridors.

### **Representative Project Experience**

#### *Environmental Compliance*

- Directing all biological aspects of the Tejon Ranch Valley/Foothill Habitat Conservation Plan covering approximately 80,000 acres of potential development and 18,000 acres of potential preserve area. Directed multiple survey efforts for threatened and endangered plant and animal species. Initiated and currently coordinating all consultation with USFWS and CDFG. The HCP will eventually be a multiple-species plan and will include a mitigation bank component.
- Directing all biological and documentation aspects of the City of Porterville Habitat Conservation Plan for impacts on habitat of the federally listed endangered Valley elderberry longhorn beetle. Managing all survey efforts on an approximate 50-acre habitat site that will serve as a preserve area and mitigation bank for expected impacts city-wide on longhorn beetle habitat. Coordinating all meetings with USFWS in the preparation of the HCP document.
- Directing all biological and documentation efforts for a programmatic Section 7 permit for the City of Hercules for potential impacts on the California red-legged frog, a federally listed threatened species. The Section 7 permit will be the result of a consultation between ACOE and USFWS, as mandated by the Federal Endangered Species Act. Coordinating all meetings with ACOE, USFWS, and the City.
- Directing the data collection and monitoring efforts associated with a biological assessment of the potential effects on the dewatering of an extensive water pipeline, owned by the Metropolitan Water District, into the Santa Clara River in Los Angeles County. Significant issues include potential impacts on a number of special-status wildlife species including unarmored threespine stickleback, least Bell's vireo, southwestern willow flycatcher, and riparian habitat.
- Directed the Section 7 consultation efforts with USFWS regarding proposed development over approximately 300 acres on Tejon Ranch in the Grapevine area. Directed all surveys and biological assessments for the federally endangered blunt-nosed leopard lizard and San Joaquin kit fox. Prepared a resource management plan that included the set-aside of over 1,100 acres to be managed under a conservation easement. Directed all coordination and meetings between USFWS and Tejon Ranch.
- Directed the field investigations, data collection, and preparation of a detailed technical biological report for Caltrans regarding the widening of a 28-mile section of a state highway

in Sonoma County, California. Significant issues included potential impacts on wetlands and creeks, a federally listed wildlife species (including California tiger salamander), and sensitive plant species. A detailed impacts analysis and mitigation plan was prepared as part of the technical report. Coordination with other resource agencies including California Department of Fish and Game and the U.S. Fish and Wildlife Service was required throughout the project.

- Managed field investigations, data collection, and preparation of the biological resources assessment portion of EIRs for the California Department of Corrections for proposed prison facilities throughout northern, central, and southern California. Significant issues included potential impacts on numerous state and federally listed threatened or endangered animal species including desert tortoise, San Joaquin kit fox, Swainson's hawk, blunt-nosed leopard lizard, Tipton kangaroo rat, and California red-legged frog. Potential impacts on wildlife movement corridors were also addressed. In some cases, consultations were conducted with the USFWS and CDFG in preparation of the need for a potential Federal Section 10(a) permit and a state Section 2090 permit.
- Prepared biological section of an EIR for a proposed industrial complex and travel plaza along Interstate 5 near the Grapevine area of Tejon Ranch in southern San Joaquin Valley. Conducted surveys for special-status species including San Joaquin kit fox, blunt-nosed leopard lizard, burrowing owl, and several plant species. Helped prepare documentation for Section 7 consultation with USFWS and ACOE and developed low-effect HCP for potential impacts to the kit fox.
- Directed field surveys, data collection, and preparation of biological resources section of an EIR for the approximately 150-acre proposed Woodridge residential site in Thousand Oaks, California. Important issues included potential impacts on drainages, oak trees, California gnatcatcher, and wildlife movement corridors.
- Directed the field surveys and documentation efforts for a proposed golf course and residential community on an approximately 390-acre site in the City of American Canyon in southeastern Napa County. Tasks involved the mapping and characterization of onsite vegetation communities (primarily oak woodland, grassland, and intermittent drainages), identification of common wildlife species, and assessing the potential for various special-status plant and wildlife species to occur on the site. Focused surveys for several special-status plant species, as well as golden eagle, California tiger salamander, California red-legged frog, and fairy shrimp were conducted on the site. A wetland delineation and negotiations with ACOE and CDFG were also conducted with respect to regulatory permits required for the project.
- Managed the field surveys and documentation efforts for the biological component of the City of Hercules Redevelopment Plan EIR. The project involved the evaluation of four separate sites within the City, ranging in location from the San Francisco Bay to inland areas along Highway 4. Biological issues included the presence of California red-legged frog (a federally listed threatened species), California tiger salamander, nesting raptors, oak and riparian woodlands, and obtaining ACOE Section 404 and CDFG Section 1600 permits for potential impacts on wetland and riparian habitats on the site.
- Directed the biological resources analysis for the proposed Westridge residential and golf course project on approximately 300 acres of open space in northern Los Angeles County. Significant biological issues included oak woodlands and oak trees, raptor foraging habitat, and wildlife movement. A majority of the project site is included within a Los Angeles County Significant Ecological Area (SEA), which required the preparation of a separate biological assessment and impact analysis as well as appearances before a SEA technical advisory committee to present the findings of the analysis and respond to concerns and issues.

- Directed the field surveys and documentation efforts for the biological component of the City of Pleasanton Rolling Hills EIR in Alameda County. A residential community is planned for the approximately 120-acre site. Tasks involved the mapping and characterization of onsite vegetation communities (primarily oak woodland, grassland, riparian woodland, and an active creek), identification of common wildlife species, and assessing the potential for various special-status plant and wildlife species to occur on the site. Focused surveys for several special-status plant species, as well as California tiger salamander, California red-legged frog, and Alameda whipsnake were conducted on the site. An evaluation of the potential of the site to serve as part of a regional wildlife movement corridor was also conducted. Other biological issues included potential impacts to jurisdictional wetland and riparian areas and the need for a Section 7 consultation with USFWS.
- Managed field surveys, data collection, and documentation of sensitive biological resources for a 5,000-acre study area, and participated in preserve area design for a 45,000-acre study area, on the Rancho Mission Viejo ranch in south Orange County, California, for inclusion in the Natural Communities Conservation Planning (NCCP) multispecies habitat management program. Directed and participated in focused surveys for more than 15 sensitive species including the California gnatcatcher, coastal cactus wren, least Bell's vireo, yellow-breasted chat, San Diego horned lizard, orange-throated whiptail, many-stemmed dudleya, Palmer's grappling-hook, southwestern pond turtle, arroyo toad, and several raptor species.
- Directed all aspects of the biological resources section of the North Valencia Annexation EIR in the City of Santa Clarita, California. This complex analysis involved potential impacts on two large riparian systems (San Francisquito Creek and Santa Clara River), threatened and endangered species (unarmored threespined stickleback, least Bell's vireo), riparian and upland habitats, and wildlife movement corridors. The analysis included a riparian buffer study to determine a biologically appropriate upland buffer between proposed development and protected riparian systems to ensure the overall viability of riparian associated wildlife populations. The project involved extensive coordination with ACOE and CDFG regarding permitting for impacts on wetlands and riparian areas.
- Managed the biological resources section of the Centre at La Quinta EIR for a proposed project in La Quinta, California. Significant issues included potential impacts on several special-status wildlife species including Palm Springs ground squirrel, Palm Springs pocket mouse, Coachella Valley fringe-toed lizard, flat-tailed horned lizard, Coachella giant sand treader cricket, Coachella Valley Jerusalem cricket, burrowing owl, and several special-status plant species. Potential impacts on desert scrub and dune communities were also of issue.
- Directed the biological resources analysis and EIR section documentation for the proposed Glenwood Specific Plan on approximately 225 acres in the City of Scotts Valley, Santa Cruz County. Significant biological issues included potential impacts on two threatened or endangered species (Scott's Valley spineflower and California red-legged frog), a species being petitioned for listing (Ohlone tiger beetle) and several other special-status plant and wildlife species, ACOE and CDFG jurisdictional wetlands and riparian areas, heritage trees, wildlife movement, and wildlife habitat. Extensive coordination with CDFG, ACOE, and USFWS was required, as well as participation in several public hearings. The project involved the development of several unique mitigation measures, including a preserve for the Ohlone tiger beetle and several special-status plant species.
- Managed all field studies and documentation efforts for the biological resources assessment and impact analysis component of the 4,200-acre Specific Plan Area 8 EIR for the City of Moorpark, Ventura County. Field evaluations included focused surveys for a number of sensitive plant and animal species, a wildlife movement corridor analysis, tree surveys, and wetland delineations. Meetings were conducted with individuals of the USFWS, CDFG, and other environmental interest groups to gain consensus on field survey methodology and results. All biological information was incorporated into a Geographic Information System (GIS) for impact analysis and land use planning.

- Managed and prepared biological assessments for three proposed projects within the City of Chino in support of preparation of Initial Studies for CEQA review. Biological issues included the presence streams and wetland areas, burrowing owls, and sensitive plant species. Coordinated with ACOE, CDFG, and Regional Water Quality Control Boards in support of permitting activities and CEQA compliance.
- Directed and prepared the biological resources analysis for a Mitigated Negative Declaration for a water main and telecommunications line extension at San Francisco International Airport. Biological issues include potential impacts on California red-legged frog and San Francisco garter snake, both federally listed wildlife species. The Negative Declaration tiered off of the Airport Master Plan Program EIR.
- Directed field investigations and documentation of the biological resources inventory and impact assessment component of a statewide EIR for proposed electrified fences at 29 state prisons throughout California. Tasks involved determining species at risk of electrocution, managing baseline assessments of habitats and species at each prison site, developing creative measures to mitigate impacts, and consulting with state and federal resource agencies. Coordinated with CDFG and USFWS staff from various regions throughout the project. Also assisted in the management of, and participated in, a similar investigation for two prisons in the state of Washington.
- Directed field surveys and documentation for the biological resources component of a Mitigated Negative Declaration for a seismic upgrade project of a 15-mile portion of the Mokelumne Aqueduct in San Joaquin and Contra Costa Counties. Directed subconsultants to perform wetland delineations, coordinated field verifications and meetings with ACOE, CDFG, and USFWS, and managed all aspects of a Section 404 ACOE wetland fill permit, a Section 7 Consultation with USFWS, and a Section 1600 Streambed Alteration Agreement with CDFG. Potential impacts of the project on the biological resources associated with three major rivers and two sloughs were addressed.
- Directed and prepared the biological resources assessment for the EIR on updates to the Land Use and Circulation Elements of the Hercules General Plan. Biological issues for this program-level EIR , which tiered extensively from the City's General Plan Update EIR, included potential impacts to riparian resources, special-status plants, California red-legged frog, raptors, and wildlife movement corridors.
- Managed the field survey design and methods of focused surveys for the federally listed endangered desert tortoise on a site proposed for a new state prison in eastern Los Angeles County. The survey effort included characterizing and mapping suitable habitat for the tortoise as well as for other special-status species, including Mohave ground squirrel and San Joaquin antelope squirrel. Consultations were conducted with the USFWS and CDFG in preparation of the need for a potential federal Section 10(a) permit and a state Section 2090 permit.
- Managed and conducted field surveys, data collection, and preparation of a biological assessment for potential impacts on the federally listed threatened California gnatcatcher as a result of a proposed project in Chula Vista, San Diego County. The biological assessment was used as a basis for a Section 7 consultation with the USFWS which resulted in a no jeopardy determination. Informal and formal consultations and meetings with USFWS were conducted throughout the process.
- Managed and conducted biological surveys and analysis of potential impacts on the federally listed threatened California gnatcatcher on a proposed OHV Park on the Otay Mesa in southern San Diego County for the California Department of Parks and Recreation. Surveys were also conducted to determine the presence or absence of several other special-status plant and wildlife species. An extensive mitigation plan was developed to minimize potential impacts on the gnatcatcher and other special-status species.

- Directed and conducted field surveys and documentation for the biological resources component of an EIR for proposed gravel mining operation in Yolo County. Analysis focused on the potential impacts of out-of-channel mining along Cache Creek, especially with respect to riparian vegetation and stream associated wildlife. Special-status species issues included Valley Elderberry longhorn beetle and Swainson's hawk.
- Prepared the biological documentation necessary for the proposed central coast NCCP in Orange County. The NCCP documentation established plans for The Irvine Company (TIC), the Transportation Corridor Agencies (TCA), the County of Orange, and other affected parties to comply with the NCCP Act of 1992, providing a comprehensive approach to resolving inherent conflicts between the need to protect sensitive and critical coastal sage scrub habitat and wildlife, and the need to proceed with TIC, TCA, and other development projects.
- Managed and conducted the field surveys and documentation efforts for the biological components of several environmental compliance documents in northern California including the Rancho Dorado EIR in El Dorado County, two gravel and rock mining projects in Yolo County, the Roseville General Plan in Placer County, the Palos Colorados EIR in Contra Costa County, the North Rocklin Circulation Element EIR in Sacramento County, and the Paradise Treatment Plant Biological Assessment in Butte County. Issues included potential impacts on vernal pools, wildlife movement corridors, wetlands, sensitive plants, and numerous sensitive animal species including bald eagle, red-legged frog, Valley elderberry longhorn beetle, Swainson's hawk, western spadefoot toad, and California tiger salamander.
- Managed and conducted field surveys, impact analysis, and documentation of an Environmental Assessment of a proposed 15-mile water and gas pipeline corridor in the Mojave Desert of southern California. Focused surveys and habitat analysis for the federally listed endangered desert tortoise and Mojave ground squirrel were also conducted within the corridor alignment. Consultations were conducted with the USFWS and CDFG in preparation of the need for a potential Federal Section 10(a) permit and a State Section 2090 permit.
- Directed and conducted the environmental documentation of biological resources for an EIR on the Water Forum Agreement, an agreement between over 20 water purveyors and water districts on the future use and management of water along the lower American River. The project involved the documentation of existing biological resources along the river and an analysis of potential impacts on these resources as a result of projected changes in water flow levels.
- Directed field investigations and managed documentation of the biological resources inventory and impact assessment component of the Big Bear Dam Bridge Route 18 EIR/EIS in San Bernardino County, California. Completed Natural Environmental Study (NES) as required by Caltrans. Directed and participated in focused surveys for several sensitive species, including the federally listed bald eagle, the state listed southern rubber boa, and the southern spotted owl.
- Managed field studies and documentation of the biological resources component of the 1,500-acre East Orange Specific Plan area in east Orange County, California. Coordinated surveys, evaluated impacts, and developed mitigations for a variety of biological resources, including sensitive species such as California gnatcatcher, western spadefoot toad, many-stemmed dudleya, San Diego cactus wren, and several raptor species.
- Managed field investigations, impact analysis, mitigation planning, and overall biological assessment documentation for several proposed projects within Significant Ecological Areas (SEAs) in Los Angeles County, California. Significant issues included several sensitive plant and wildlife species, sensitive habitat areas, and potential impacts on wildlife movement corridors.

- Managed field surveys, impact analysis, documentation, and project coordination efforts for the biological component of the Stetson Ranch EIR and the Bear Mountain Ski Resort expansion project EIR/EIS in the San Bernardino National Forest. Significant issues included potential impacts on the bald eagle, California spotted owl, mule deer, mountain lion, black bear, and San Bernardino flying squirrel.
- Managed the preparation of the biological resources assessment for the East Coyote Hills EIR in Orange County, California. Coordinated field surveys and analyses of the onsite population of California gnatcatchers. The assessment resulted in the development of a pre-listing Habitat Conservation Plan (HCP) for the California gnatcatcher that resulted in the issuance of a Section 10(a) permit pursuant to the Federal Endangered Species Act.
- Managed and conducted field surveys, impact analysis, and documentation of an Environmental Assessment of a proposed 20-mile transmission line for SDG&E in Orange County. The project entailed focused surveys for a number of sensitive plant and animal species, an analysis of several alignment alternatives, and an extensive mitigation development, implementation, and monitoring program.
- Prepared a Habitat Conservation Plan (HCP) for the federally endangered Stephens' kangaroo rat for the Metropolitan Water District of Southern California in Riverside County, in accordance with Section 10 of the Endangered Species Act.
- Managed and conducted numerous biological resources inventories and baseline assessments in a variety of habitat types in the counties of Sacramento, Contra Costa, Solano, Yolo, Merced, San Joaquin, Tulare, Fresno, Ventura, Los Angeles, San Bernardino, Riverside, and Orange, California. Issues included potential impacts on vernal pools, riparian habitats, wildlife movement corridors, wetlands, special-status plants, and numerous special-status animal species including bald eagle, California red-legged frog, Valley elderberry longhorn beetle, Swainson's hawk, desert tortoise, California gnatcatcher, San Joaquin kit fox, vernal pool and fairy shrimp, and California spotted owl. Most of these assessments were used in subsequent environmental impact reports and other regulatory documents.
- Managed field investigations and document preparation for biological resources inventory within the 5700-acre Villages of Laguna San Luis proposed project in Merced County, California. Sensitive species surveys included San Joaquin kit fox and burrowing owl.
- Managed a comprehensive biological baseline inventory of habitat types and both common and sensitive plant and wildlife species for a 3,000-acre undeveloped site in western Riverside County owned by the Lockheed Corporation. Focused surveys for sensitive species included the California gnatcatcher, coastal cactus wren, several plant species, and a trapping program for the Stephens' kangaroo rat.

#### *Focused Studies*

- Designed and managed a Swainson's hawk radio-telemetry study over an 8,000-acre study area in West Sacramento, California, to determine home range and habitat use of eight pairs of nesting Swainson's hawks. Responsible for overall study design, capture and attachment of radio transmitters on five Swainson's hawks, radio tracking methodology, staffing, and overall data analysis and interpretation. All data was incorporated into a Geographic Information System (GIS) for analysis and presentation. The information obtained was used to evaluate potential impacts on nesting Swainson's hawks and to develop suitable mitigation measures. The project involved coordination between CDFG, the City of West Sacramento, and the applicants during all phases of the study. The information was eventually used as part of a Section 2081 consultation pursuant to CESA.
- Directed focused surveys for special-status mammal and reptiles species over a 20,000-acre area on Newhall Ranch in Los Angeles County. Methods employed for the detection of mammals included trap and release with Sherman live traps, scent stations, nighttime

spotlighting, remote motion-triggered camera systems, and AnaBat detection systems. Methods for reptiles included walking identified transects, the use of pit-fall traps, and substrate raking. Locations of data collection sites was noted on a GPS and downloaded into a GIS. Information on species observations, distribution, and habitat was compiled, analyzed, and documented in a technical report.

- Directing wildlife movement corridor study on Tejon Ranch in the Tehachapi Mountains spanning Kern and Los Angeles Counties. Study utilized remote motion-triggered cameras installed at over 20 underpass and culvert locations along Interstate 5 for a total of approximately 25 miles. Information on species, number, location, and date is being compiled, analyzed, and documented. The information is being used to support planning process of proposed development in the region.
- Designed and managed wildlife movement corridor studies for four proposed projects in Ventura County and three proposed projects in Orange County, including a 16-mile transportation corridor project. The studies, which involved the use of remote motion-triggered camera, track plates, and others wildlife movement data collection techniques, were designed to identify and quantify target wildlife species using the project sites, identify areas that are used by these species as travel routes, and to evaluate the relative importance of these areas as potential movement corridors. Recommendations on corridor design were also developed to mitigate potential adverse impacts on movement corridors.
- Conducted survey and habitat analysis for burrowing owls on a 30-acre project site in the City of Milpitas. Based on the presence of breeding pair of owls, identified and evaluated that portion of the site most likely to be included within the foraging range of the owls. Developed a mitigation plan for proposed impacts to the owls and occupied habitat, which included the passive relocation of the owls from the site. Directed and participated in the implementation of the owl mitigation measures, including coordination with CDFG.
- Managed a comprehensive wildlife movement corridor study on the 45,000-acre Rancho Mission Viejo ranch in south Orange County, California. Directed and participated in field investigations and assimilation of data from previous studies. Produced a wildlife movement corridor map and documentation of all field work and analysis.
- Designed, managed, and implemented a mitigation and construction monitoring program for a large-scale project potentially impacting breeding burrowing owls in Fresno County, California. Designed and presented educational materials at a pre-construction meeting attended by 40 individuals. Trapped and banded burrowing owls. Coordinated and consulted with the California Department of Fish and Game on all aspects of the program.
- Conducted numerous focused surveys for the federally listed threatened California gnatcatcher in San Diego, Orange, Los Angeles, and Ventura Counties. Surveys were conducted under a federal USFWS survey permit.
- Directed the surveys for three federally listed threatened and endangered fairy shrimp species in a large vernal pool complex (over 100 pools) in eastern Sacramento County. Managed subcontractor contracts and directed the compiling of data and information into a document that met USFWS documentation protocols for surveys of fairy shrimp species.
- Managed an analysis of potential impacts of wind turbines on biological resources on a proposed wind energy site in Solano County. The study focused on the potential effects of wind anemometer towers and wind turbine towers on avian species, particularly raptors and migratory birds.
- Directed and prepared a comprehensive raptor management plan for the 1,500-acre East Orange Specific Plan area and a 3,000-acre dedication area in Orange County. The plan included an analysis of foraging and perch habitat enhancement strategies, nest box and nest platform design criteria and placement, and plan monitoring and evaluation.

- Directed and conducted a focused survey for Swainson's hawks and burrowing owls for the Department of Public Works, City of Davis. An analysis of potential impacts on habitat for these species, consultation with CDFG, and development of measures to mitigate potential impacts were also conducted.
- Directed and managed a comprehensive survey for mule deer on the 1,500-acre East Orange Specific Plan area for The Irvine Company in Orange County. Analyses included descriptions of population density, habitat use, and distribution.
- Served as field investigator and principal author of a biological resources assessment for a U.S. Navy development project in Mono County, California. Conducted a survey for mule deer and specifically addressed potential impacts on mule deer migration areas.
- Served as field investigator for a comprehensive great blue heron breeding and foraging study in East Orange County, California. Responsibilities included retrieving great blue heron chicks from nests, attaching radio transmitters and leg bands, and radio-tracking fledged herons throughout Southern California.
- Conducted field surveys and completed associated descriptive analyses for the presence of habitat and populations of the federally listed endangered Stephens' kangaroo rat for several development projects in Riverside County, California.
- Served as a monitoring biologist in the development and maintenance of a captive breeding program for the federally listed endangered bald eagle at the USFWS Patuxent Wildlife Research Center. Assisted in the methodology and analysis of studies on bald eagle eggshell thinning, lead shot poisoning, and breeding behavior.

### **Professional History**

Impact Sciences, Inc. - Managing Principal/Director of Biological Services  
 Michael Brandman Associates - Senior Project Manager, Wildlife Biologist  
 U.S. Fish and Wildlife Service (USFWS), Patuxent Wildlife Research Center - Biological Technician

### **Education**

M.S., Business Management, Colorado State University  
 B.S., Wildlife Biology, Colorado State University

### **Professional Affiliations**

Association of Environmental Professionals (AEP)  
 Raptor Research Foundation  
 Society for Conservation Biology  
 California Swainson's Hawk Technical Advisory Committee

### **Permits/Certifications**

Scientific Collecting Permit, State of California, CDFG  
 Federal Bird Banding Permit, USFWS  
 Section 10(a) Permit to Survey for California Gnatcatcher, USFWS  
 Habitat Evaluation Procedures, USFWS  
 Certified Scuba

### **Publications**

Babcock, K.W. 1995. Home range and habitat use of breeding Swainson's hawks in the Sacramento Valley of California. *J. Raptor Research* 29(3):193-197.

## **Josh Phillips**

*Senior Biologist*

Mr. Phillips serves as a biologist on environmental planning projects at Impact Sciences. He has a thorough understanding of the California Environmental Quality Act (CEQA), both State and Federal Endangered Species Acts, and state and federal regulations and permits involving biological resources. Mr. Phillips has extensive experience analyzing the potential effects of proposed development projects on biological resources and has prepared numerous biological resource chapters of EIRs. He also has experience conducting special-status species surveys, habitat evaluations, wetland delineations, vegetation mapping, and mitigation design and implementation.

In addition, Mr. Phillips has extensive knowledge of data analysis and the use and applications of GIS (ArcGIS) and GPS (Trimble) equipment. Mr. Phillips has used these tools in conducting numerous spatial analyses. Specifically, Mr. Phillips has used GIS/GPS technology in analyzing and mapping wildlife movement corridors, delineating wetlands, and identifying suitable restoration areas.

### **Representative Professional Biological Experience**

- Prepared the biological resources EIR chapters for the Ranch View Terrace and McHenry Library projects on the UC-Santa Cruz campus. Issues evaluated include indirect impacts to two seeps adjacent to the project site and associated special-status plant species, the impact of altered surface runoff on special-status cave dwelling invertebrates potentially occurring within sinkholes, and potential impacts to the federally listed Ohlone tiger beetle and California red-legged frog.
- Prepared the biological resources chapter of the Monarch Village Apartments EIR. The project site is located in Santa Cruz and is within the coastal zone. The project involved the development of a 206-unit residential development on a 9-acre site. The project site borders a willow riparian woodland that provides high value habitat for common and special-status wildlife and serves as a regionally important wildlife movement corridor. Key issues evaluated included impacts to wetlands, riparian habitats, and special-status species.
- Prepared the Draft Mitigated Negative Declaration for the Bean Creek Estates project, located in Scotts Valley. The proposed project involved evaluating potential impacts to three federally listed species, including Mount Hermon June beetle, Santa Cruz wallflower, and Ben Lomond spineflower, and developing mitigation measures to protect these species within the proposed open space area.
- Prepared the biological resources chapter of the Watsonville Home Depot EIR. The project site is bordered by a slough and the vegetation on the site consists of non-native grassland and willow riparian woodland. A wetland delineation was conducted to identify the extent of ACOE and CDFG jurisdiction on the project site. Key issues evaluated included potential impacts to special-status plants, and potential impacts due to increased noise and light/glare on wildlife inhabiting the willow riparian woodland.
- Prepared the Draft Natural Environmental Study (NES) Report for the Caltrans Sonoma 116 Pavement Overlay Project. The proposed project involves widening and other improvements to the eight-mile stretch of State Route 116 between Cotati and Sebastopol. Participated in focused special-status plant surveys consistent with the USFWS protocol for the four federally endangered plant species on the Santa Rosa Plains, California tiger salamander (CTS) larval surveys, a jurisdictional wetland delineation, and a native tree survey. Mapped all suitable CTS habitat within and bordering the project boundaries, prepared Biological Assessments (consistent with the Federal Endangered Species Act) for CTS, steelhead trout, and California freshwater shrimp, and maintained a GIS database of the data collected on the project site. Coordinated with the USFWS regarding potential impacts to federally listed species.

- Prepared portions of the Draft Biota Report for the 12,000-acre Centennial Specific Plan project site, pursuant to the requirements of the Los Angeles County Significant Ecological Area Technical Advisory Committee (SEATAC). The report incorporated the results of four years of focused biological studies, including numerous special-status plant and wildlife surveys, a wetland delineation, an oak tree survey, and a wildlife movement analysis. The report included an analysis of anticipated impacts to special-status plant and wildlife species, common and sensitive plant communities, resources under the jurisdiction of the Army Corps of Engineers (ACOE) and the California Department of Fish and Game (CDFG), wildlife movement corridors, and to two Significant Ecological Areas identified by the Los Angeles Planning Department.
- Assisting the City of Hercules in addressing anticipated impacts to biological resources resulting from the proposed Hercules Hospitality Corridor project. The proposed project would result in the loss of occupied California red-legged frog habitat and in the fill of jurisdictional wetlands. Consulting services include the preparation of a Biological Assessment (pursuant to Section 7 of the Federal Endangered Species Act), conducting a jurisdictional wetland delineation, and mapping and evaluating the habitat value of potential mitigation sites.
- Preparing the biological resources section of the mitigated Negative Declaration for the Hercules Train Station project. USFWS protocol-level surveys were conducted to determine the presence/absence of federally listed branchiopods (i.e., fairy shrimp). Other issues of concern include potential indirect impacts to special-status wildlife species potentially occurring within an adjacent tidal marsh.
- Prepared the biological resources chapter of the Hidden Hills EIR. The 42-acre project site is located in Los Angeles County. Key issues evaluated included the loss of freshwater marsh habitat, and potential impacts to arroyo toad, silvery legless lizard, and to roosting special-status bats.
- Prepared the Biological Assessment for the Section 7 Consultation with USFWS for the Palm Avenue Realignment project, in Hercules, California. The Biological Assessment evaluated the proposed project's direct, indirect, and cumulative impacts on the federally threatened California red-legged frog. The report was prepared in accordance with the legal requirements set forth under Section 7 of the Federal Endangered Species Act.
- Prepared the biological resources chapter of the Duncan Canyon Subdivision EIR. The project site is located in Pinole, California, in an undeveloped canyon that is bordered by residential development. The project involves the development of 41 single-family homes on a 41-acre site. Focused surveys were conducted for special-status plant species. Key issues evaluated included potential impacts to special-status wildlife species and the loss of bay-oak woodland.
- Prepared the biological resources chapter of the Breuner Marsh Mitigation Bank EIR. The proposed wetland mitigation bank is located in Richmond, California, and borders the San Pablo Bay. The project site contains extensive tidal marsh areas and contains a population of the federally and state endangered salt marsh harvest mouse. Key issues evaluated included potential impacts to special-status wildlife species, and temporary impacts to wetlands under the jurisdiction of the Army Corps of Engineers (ACOE).
- Prepared the biological evaluation report for a proposed Class I bike path in Calistoga. A field survey was conducted to evaluate on-site habitats relative to their potential to support special-status plant and wildlife species known to occur in the project region. In addition, a focused special-status plant survey was conducted. Potential direct and indirect impacts to northwestern pond turtle, California red-legged frog, Cooper's hawk, and sharp-shinned hawk were evaluated and mitigation measures were recommended as appropriate.

- Prepared portions of the Tejon Ranch Valley Floor Habitat Conservation Plan (HCP). The HCP is being designed to preserve habitat occupied by special-status plant, insect, amphibian, reptile, mammal, and bird species that occur within the San Joaquin Valley. Identified the special-status species that occur, or potentially occur, within the HCP boundaries, described their natural history, and analyzed direct and indirect impacts to these species resulting from development in the project area.
- Provided biological monitoring services for two projects at Lake Merced for the San Francisco Department of Public Works (SFDPW). Conducted construction personnel education with an emphasis on the California red-legged frog, preconstruction nesting bird surveys, preconstruction red-legged frog surveys, and construction monitoring. Attended meetings with SFDPW to discuss compliance with all issued biological permits.
- Prepared biological evaluation reports for proposed cell tower sites in Concord, Livermore, and Fresno. The vegetation communities on the site were identified and characterized, all wildlife species observed on the site were documented, and the suitability of the site's habitat to support special-status plant and wildlife species known to occur in the project region was evaluated.
- Managed the delineation of the wetlands on a 12,000-acre portion of the Tejon Ranch, and headed the GIS/GPS mapping process for the project. The project involved the evaluation of vegetation, hydrology, and soils, and the recording the location of all jurisdictional resources using a Trimble GPS unit. The collected data was analyzed and mapped using ArcView (8.1) and provided to the project engineer for planning purposes.

#### **Education**

Master of Environmental Science and Management, Ecology Emphasis, University of California, Santa Barbara. June 1999.  
 Bachelor of Science in Environmental Biology and Management, University of California, Davis. June 1995.

#### **Permits**

Federal Endangered Species Permit (TE-086595-0 Nov. 2004–Nov. 2008) for listed vernal pool branchiopods.

#### **Professional Affiliations/Certifications/Additional Coursework**

The Wildlife Society  
 Ecology and Management of Vernal Pool Grasslands, U.C. Davis Extension, March 2004.  
 USFWS Approved California Fairy Shrimp Identification Course, December 2003.  
 California Tiger Salamander: Ecology and Survey Techniques, Wildlife Society, October 2003.  
 California Burrowing Owl Symposium, Wildlife Society, November 2003.  
 Sensitive Amphibians and Reptiles of the Southern Sierra Nevada, Wildlife Society, June 2001.  
 Ecology and Use of Wetlands, U.C. Berkeley Extension, June 2001.  
 Wetland Delineation and Management Training, Richard Chin Environmental Training, June 2001.  
 California Native Plant Habitat, Merritt College, June 2001.

## **Larry Lodwick**

### *Senior Wetland/Regulatory Specialist*

Mr. Lodwick is a Senior Biologist with Impact Sciences and has 30 years of professional experience in the fields of natural resource assessment and management, environmental and wetland regulations, natural resource impact assessment, mitigation plan development, and monitoring. His other specialties include botanical surveys, wetland and riparian functional assessments, mitigation planning, and permitting coordination. Mr. Lodwick also conducts environmental impact assessments, natural resource inventories, and wildlife habitat assessments. Currently reviews biological documents being prepared by the company prior to submittal to clients or public agencies.

Mr. Lodwick's professional experience includes three and a half years of environmental consulting in Southern California, where he conducts botanical surveys, wetland and riparian corridor delineations and permitting, and oak tree surveys; several years with the Alaska Department of Environmental Conservation (ADEC), representing the department on the Alaska Coastal Management and Permit Reform Working Groups which reviewed land use plans and policies for the state's coastal region and served on the Juneau Wetland Management Task Force; and as a Natural Resources Biologist, developing natural resource management plans for the Texas State Park System.

Mr. Lodwick has a Masters of Science degree from Baylor University in Biology (Wetland Ecology) and has authored a number of papers and articles on wetland ecology, vegetation, and regulations. Mr. Lodwick is trained in the use of the Washington State Wetland Functional Methodology; was on the Oregon wetland assessment team for the development of a Hydrogeomorphic Methodology (HGM) for Willamette Valley wetlands; and was trained in the HGM methodology for the south coast region of Santa Barbara County, California. Mr. Lodwick has conducted wetland functional assessments, using HGM, Wetland Evaluation Technique, and other accepted methods for numerous sites. Mr. Lodwick has conducted reviews of wetland projects for the cities of Vancouver and Battle Ground Washington, and for Clark and Skagit Counties in Washington for compliance with local, state, and federal regulations.

### **Representative Project Experience**

#### *Impact Sciences, Inc.*

- Conducted a wetland/stream jurisdictional delineation, which has been verified by the federal and state resource agencies, and a Sensitive Ecological Areas Constraints Analysis, submitted to the County of Los Angeles, for the 12,000-acre Centennial site of the Tejon Ranch, Los Angeles County. These reports were required for determining the constraints and opportunities for the site's planning and approval processes and assisted with the project site planning for the protection of high value natural resource areas.
- Prepared a Wetland and Dune Restoration and Creation Plan, including monitoring and adaptive management sections for mitigating impacts to a coastal residential development project referred to as North Shore. The plan utilized GPS mapping of existing resources and constraints to the mitigation process. Worked with the project's attorney and engineer to achieve a plan that will be submitted to regulatory agencies.
- Conducted and prepared a detailed vegetation analysis of hydrophytic species cover and dominance on the North Shore site in the City of Oxnard, with the goal of establishing the size and configuration of wetlands under the jurisdiction of the California Coastal Commission. A report was prepared for, and accepted by, the Coastal Commission staff.
- Conducted a wetland delineation on a section of land on the University of California, Santa Barbara campus that was proposed for the construction of an alumni center. The delineation involved a site adjacent to the campus lagoon and required detailed soils and vegetation analysis. The wetland was mapped using a GPS backpack unit.

- Prepared a Resource Management and Monitoring Plan monitored the implementation for Parker Ranch, a site being developed as a residential development. The project involves the replacement of numerous oak trees and enhancement of coastal sage scrub habitat on site.
- Prepared a Resource Management and Monitoring Plan monitored the implementation for the Las Virgenes Unified School District, for the site development of a new middle school. The project involves the replacement of numerous oak trees and the creation and enhancement of a riparian corridor on the school site.
- Prepared a wetland/riparian jurisdictional delineation and currently involved in the planning and permitting for an equestrian ranch in Simi Valley. The project involves crossings of several streams and the avoidance of habitat for several listed sensitive status species.
- Prepared a Resource Management and Monitoring Plan for Plum Canyon Phase 1C, a residential development associated with several jurisdictional streams and numerous sensitive species in the City of Simi Valley.

*The JD White Company, Inc.*

- Participated in several development phases of the approximately 500-acre Washington State University, Vancouver Campus, from initial site assessment and resource delineations to site plan development and monitoring. Campus developed involved numerous wetland and riparian issues under Clean Water Act and Endangered Species Act (salmonid) jurisdiction. Section 404 permits and local wetland and habitat permits were obtained.
- Developed a natural resources restoration plan for the nearly 200-acre Environmental Science Center at the Rock Creek Campus of Portland (Oregon) Community College involving numerous wetland and upland habitat types. Estimated costs and time frame for the implementation of the project.
- Conducted a survey for the Ute's ladies-tresses orchid (*Spiranthes diluvialis*) along an 80-mile Bonneville Power Administration electric transmission corridor in northern Idaho, for to supplement a biological assessment for power line vegetation maintenance by the agency.
- Conducted a juvenile salmonid habitat and benthic invertebrate survey; outlined permitting issues and presented the project at a pre-application conference with federal and state agencies, and reviewed site development plans for a Skamania County recreational water access site on a backwater of the Columbia River.
- Directed a wetland functional assessment for the Port of Vancouver (Washington) involving numerous floodplain wetlands, in preparation of site development and anticipated mitigation. Coordinated with staff to calculate mitigation needs and an initial strategy for mitigation for wetland impacts.
- Developed an alternative strategy to the City of Vancouver, Washington's tree management program, for which an established country club and golf course would be authorized by the City to continue to manage their landscape without the need of additional tree removal permits required by a new ordinance.
- Conducted wetland delineations and permitting, and prepared and monitored mitigation plans for four electrical substations and the connecting transmission lines corridors for Clark Public Utilities, Clark County, Washington.

## Publications

- Amerson, P., L.N. Lodwick, and D.H. Riskind. 1975. The Incredible Orchid Family. *Texas Parks and Wildlife Magazine* 33(10): 16-20.
- Lodwick, L.N. 1975. A Second Collection of *Psilotum nudum* from Texas. *American Fern Journal*. 65: 62.
- Lodwick, L.N. 1976. Vegetation Sampling for LANDSAT Data. Appendix B. In: Development and Application of Operational Techniques for the Inventory and Monitoring of Resources and Uses for the Texas Coastal Zone. Quarterly Report, Feb. 1976. Prepared by the Texas General Land Office, for the Goddard Space Flight Center, Greenbelt, Maryland.
- Lodwick, L.N. 1976. The Big Thicket Bogs and Pineland Preserve. *Texas Horizons* 2(3): 7.
- Lodwick, L.N. and D.H. Riskind. 1977. Landscape Maintenance and Management Program. In: Preservation Plan and Program for Washington-on-the-Brazos State Historic Park. pp. 79-85. Texas Parks and Wildlife Department, Austin, Texas.
- Lodwick, L.N. and D.H. Riskind. 1978. Resource Management Program. In: Development Plan and Program for Hale Ranch State Park. pp. 142-147. Texas Parks and Wildlife Department, Austin, Texas.
- Lodwick, L.N. and D.H. Riskind. 1978. Landscape Management Program. In: Preservation Plan and Program for Caddoan Mounds State Historic Site. pp. 64-67. Texas Parks and Wildlife Department, Austin, Texas.
- Lodwick, L.N. 1980. The Genus *Sphagnum* in Texas. *The Bryologist* 83(2): 214-218.
- Wyatt, R. and L.N. Lodwick. 1981. Variation and Taxonomy of *Aesculus pavia* in Texas. *Brittonia* 33(1): 39-51.
- Lodwick, L. and E.J. Ruby. 1990. Regional Wetland Mitigation Banking: Has Its Time Come? Association of Environmental Professional Statewide News. Summer 1990, p. 6. Association of Environmental Professionals. Sacramento, California.
- Lodwick, L.N. 1992. Featured Plant: *Gaultheria shallon* Pursh., Ericaceae (Heath Family). Newsletter of the Salal Chapter of the Washington Native Plant Society. Vol. 2(1): 3-4. Reprinted in Douglasia, Newsletter of the Washington Native Plant Society 16(2): 24.
- Lodwick, L.N. 1992. Wetlands Identification: What's the Difference Between Reconnaissance and Delineation. *Skagit Realtor Review* April 1992. p. 4,10.
- Lodwick, L.N. 1992. Provide Wildlife Habitat Around Your Home. *Skagit Valley Herald*, April 20. Special Earth Week Supplement, p. 1.
- Lodwick, L.N. 1992. The Genus *Sphagnum*, the Peat Mosses. Newsletter of the Salal Chapter of the Washington Native Plant Society. Vol. 2(2): 8-9.
- Lodwick, L.N. 1992. Generalized Plant Communities and Specific Community Descriptions. Newsletter of the Salal Chapter of the Washington Native Plant Society. Vol. 2(3): 6.

**Education and Certifications**

Bachelor of Arts, Biology, Central Methodist College, Fayette, Missouri 1971  
Master of Science, Biology, Baylor University, Waco, Texas 1975

**Professional Affiliations**

Society of Wetland Scientists

## **Holly J. Hill**

*Staff Biologist*

Ms. Hill serves as a Staff Biologist for Impact Sciences, Inc. She has managed and/or conducted a variety of terrestrial studies including endangered species surveys, floristic surveys, biological assessments, biological constraints analyses, alternatives analyses, mitigation monitoring plans, wetlands delineations, and environmental document preparation. Ms. Hill has 12 years of field experience in the San Joaquin Valley. She has participated in federal, state, and private projects related to endangered species and the agricultural and petroleum production industries.

### **Representative Project Experience**

- Conducted habitat evaluations, focused, and State/USFWS protocol surveys for special-status wildlife species on Tejon Ranch in Kern County including San Joaquin kit fox, blunt-nosed leopard lizard, western spadefoot, Tehachapi slender salamander, and California tiger salamander. Conducted over 150 hours of spotlight surveys for San Joaquin kit fox. Monitored active construction sites to ensure suitable protection of special-status species. Conducted general and focused botanical surveys for special-status plants and vegetation communities and assisted with the development of the **Tecuya Creek Restoration Plan for Tejon Ranch**.
- Participated in numerous presence/absence surveys for the San Fernando spineflower, the slender-horned spineflower and short-joint beavertail cactus on **Newhall Ranch**, Los Angeles County, California. Also conducted oak tree surveys.
- Conducted protocol-level burrowing owl surveys and implemented exclusion mitigation plans for projects in San Bernardino County, California. Tasks included presence/absence surveys to identify burrowing owls and potential owl burrows, the installation of exclusionary devices and construction monitoring.
- Conducted biological tasks related to the endangered species program at the **Department of Energy's Elk Hills Naval Petroleum Reserves I and II**, Kern County, California. Duties included mammalian and herpetological trapping, data collection and monitoring of federal and state listed endangered species including San Joaquin kit fox, blunt-nosed leopard lizard, and giant kangaroo rat. Kit fox work included spotlighting, live trapping, radio telemetry, scent stations, den observations, den excavations, and necropsies on kit fox mortalities. Conducted surveys for special-status plants, and monitored revegetation sites to determine revegetation success. Also conducted preconstruction monitoring for all petroleum-related production projects (drilling, pipelines, seismic surveys, road construction, etc.) and developed programmatic educational materials for the public. Regularly used global positioning system (GPS), recorded weather data for sixteen weather stations, and assessed habitat damage (fire and hazardous materials).

### **Education and Certifications**

Land Use and Planning Certificate Candidate, University of California Santa Barbara  
Associate of Arts, Taft College

Wildlife Law Training – Bakersfield College  
Archaeological Training – University of California Riverside  
Certified Project Wild Facilitator – California Department of Fish and Game  
Wetland Delineation Certification – Wetland Training Institute, MT  
Stream Corridor Restoration Training – Federal Interagency Stream Restoration Working Group  
Certified SCUBA Instructor (Ret.) – NAUI, SSI

## **Andrew McGinn Forde**

### *Project Wildlife Biologist*

Mr. Forde holds a research degree in wildlife biology from the University of St Andrews, Scotland and has more than 5 years of professional experience as a wildlife biologist working in California. His skills include breeding bird surveys, general wildlife surveys, species-specific surveys, population modeling, wildlife capture, radio telemetry techniques, habitat assessment, and vegetation mapping in support of environmental documentation under the California Environmental Quality Act (CEQA), the California Fish and Game Code, the National Environmental Policy Act (NEPA), and the Endangered Species Acts.

Mr. Forde holds a 10(a)(1)(A) Permit, which allows him to conduct focused surveys for quino checkerspot butterfly and southwestern willow flycatcher. He also operates under a Memorandum of Understanding, which allows him to conduct surveys for desert tortoise.

Mr. Forde is also a certified wetland delineator (U.S. Army Corps of Engineers, #2128). He has attended advanced wetland courses and workshops related to federal and state wetland permitting. Since becoming a certified wetland delineator, Mr. Forde has completed a number of wetland delineations and has prepared Section 404 applications (U.S. Army Corp of Engineers), Section 401 applications (Regional Water Quality Control Board), and Section 1600 Streambed Alteration Agreements (California Department of Fish and Game).

In addition, Mr. Forde has written numerous biological reports, prepared and reviewed sections for CEQA and NEPA documents, has edited scientific papers for the United States Geological Survey, and written short communications for press release.

### **Representative Professional Experience**

- **Regents of the University of California, Orange County, CA** – Conducted general wildlife and focused surveys for burrowing owl, white-tailed kite, loggerhead shrike, California horned lark, and black-tailed jack rabbit, conducted breeding bird surveys, and assisted permitted biologists with focused surveys for coastal California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher on the University of California's Irvine campus. A pair of gnatcatchers fledged three young at the site. Mr. Forde also provided technical advice during client meetings, managed on-call requests for construction monitoring, and prepared internal memoranda and supporting documentation.
- **SWCA Environmental Consultants, Flagstaff, AZ** – Conducted focused surveys, nest searching and nest monitoring activities for southwestern willow flycatcher (WIFL) at more than 10 sites located along the Lower Colorado River, Bill Williams River, Gila River, and the All American Canal. The objectives of the project were to locate, via broadcast and observation, territorial WIFLs, re-sight color banded birds, find and monitor WIFL nests, and band non-banded adults and their nestlings. Primary duties included conducting surveys, re-sighting color banded birds, nest searching, and nest monitoring. More than 100 WIFLs were detected during the surveys including more than 25 territorial males, 12 pairs, and 7 nests.
- **Glorious Land Company, Riverside County, CA** – Reviewed more than 150 publications on the ecology of the desert tortoise and prepared a paper for presentation to the USFWS during Section 7 Consultation. The paper provided the rationale for an alternative survey methodology specifically developed for the 10 square mile project site. The USFWS accepted the methodology and approved the use of hand-held GPS units for navigating transects, which is a departure from the traditional method of using PVC pipe. The survey consisted of more than 2,200 1-mile transects on the project site and more than 80 linear miles in the zone of influence around the project site. Responsibilities included logistics, the selection and management of the ten-man team, conducting the surveys, and preparation of the report.

- **State of California, Department of Parks and Recreation, San Diego County, CA** – Mr. Forde conducted general wildlife surveys and provided an assessment for the potential occurrence of threatened, endangered, and sensitive species within Chino Hills State Park.
- **Playa Capital, Los Angeles County, CA** – Conducted general wildlife and breeding bird surveys, provided technical assistance during client meetings, managed on-call requests for construction monitoring and clearance surveys, and prepared internal memoranda and supporting documentation. Mr. Forde also conducted surveys and prepared reports to support applications for coastal development permits. The project site is adjacent to the Ballona Wetlands, is controversial, and has strong opposition. Mr. Forde responded to opposition concerns on behalf of the client and prepared reports in support of potential litigation.
- **Unocal Corporation, Ventura County, CA** – Unocal is proposing a 3000-acre development in the Simi Valley. The property is located on the north side of the 118 Freeway and is one of only a few areas with remaining open space on the north side of the freeway. The freeway cuts between the Santa Susana Mountain Range and the Simi Hills. A major issue associated with the project was the idea of a wildlife corridor between the Santa Susana Mountains and the Simi Hills. Mr. Forde conducted field investigations into the connectivity of the Unocal property with the Simi Hills and to the Santa Susana Mountains. Mr. Forde reviewed more than 100 publications on the use of wildlife corridors by mountain lions and other large mammals and a number of recent studies conducted along the 101 Freeway, the 118 Freeway, and Highway 23. Mr. Forde also wrote a paper discussing the current function of the property as a wildlife corridor.
- **Metropolitan Water District, Los Angeles County, CA** – Conducted preliminary field surveys, habitat assessment, and analyzed potential environmental and biological issues associated with a proposed 8-mile subsurface groundwater barrier and prepared the Initial Study/Mitigated Negative Declaration.
- **The Glorious Land Company, Riverside County, CA** – Conducted general wildlife surveys at four one-mile square properties east of Indio in the Sonoran Desert and provided an assessment for the potential occurrence of desert tortoise. Eight tortoises were located during the surveys and evidence suggested that bighorn sheep also frequent the properties.
- **Big Canyon Country Club, Orange County, CA** – Conducted breeding bird surveys and provided technical assistance during the modification of a golf course pond.
- **Florida Light and Power, San Bernardino County, CA** – Collected data on the use of evaporation ponds by birds at a solar power plant in the Mojave Desert, collected invertebrates for selenium analysis, and prepared a report with the findings.
- **The Planning Center, Orange County, CA** – Conducted field surveys, habitat assessment, vegetation mapping, and analyzed potential biological issues associated with the proposed expansion of water utilities in the City of Walnut, City of Diamond Bar, Rowland Heights, and City of Industry and prepared the Initial Study/Mitigated Negative Declaration.
- **City of Malibu, Ventura County, CA** – Conducted preliminary field surveys, habitat assessment, and analyzed potential environmental and biological issues associated with a proposed pedestrian footbridge and trail system at Las Flores Canyon Park and prepared the Initial Study/Mitigated Negative Declaration.
- **Los Angeles Department of Public-Works, Los Angeles County, CA** – Conducted general wildlife surveys, breeding bird surveys, provided technical assistance, and provided an assessment discussing the potential for the occurrence of endangered, threatened, or sensitive species.

- **Level 3 Communications, San Diego and Imperial counties, CA, and Yuma County, AZ** – Participated in field surveys for special status species including desert tortoise, burrowing owl, flat-tailed horned lizard, and arroyo toad during the installation of a fiber optic network between San Diego, CA and Yuma, AZ.

#### **Wetland Delineations**

- **Playa Capital, Los Angeles County, CA** – Mr. Forde assisted with wetland delineations in and around areas of the Ballona Wetlands and prepared reports in support of applications for coastal development permits.
- **Regents of the University of California, Orange County, CA** – Mr. Forde delineated wetlands on a 40-acre site at the Irvine campus and prepared Section 404 (U.S. Army Corp of Engineers), Section 401 (Regional Water Quality Control Board), and Section 1600 Streambed Alteration Agreement (California Department of Fish and Game) applications.
- **Rox Consulting Group, San Bernardino County, CA** – Mr. Forde delineated wetlands on a 100-acre site in Calimesa and assisted the writing of the report.
- **County of Orange, Orange County, CA** – Mr. Forde assisted with wetland delineation at Dairy Fork Creek near Laguna Hills and prepared Section 404 (U.S. Army Corp of Engineers), Section 401 (Regional Water Quality Control Board), and Section 1600 Streambed Alteration Agreement (California Department of Fish and Game) applications.
- **Regents of the University of California, Orange County, CA** – Mr. Forde assisted with wetland delineations on a 75-acre site at the Irvine campus and prepared Section 404 (U.S. Army Corp of Engineers), Section 401 (Regional Water Quality Control Board), and Section 1600 Streambed Alteration Agreement (California Department of Fish and Game) applications.
- **Big Canyon Country Club, Orange County, CA** – Prepared Section 404 (U.S. Army Corp of Engineers), Section 401 (Regional Water Quality Control Board), and Section 1600 Streambed Alteration Agreement (California Department of Fish and Game) applications.

#### **Botanical Surveys, Vegetation Mapping, and Restoration Projects**

- **Glorious Land Company, Riverside County, CA** – Mr. Forde participated in mapping vegetation at four one-mile square properties east of Indio in the Sonoran Desert. Vegetation communities included Creosote-Bursage Scrub, Creosote-Brittlebush Scrub, Box Thorn Scrub, Palo Verde-Ironwood Woodland, and Palo Verde-Ironwood Scrub.
- **State of California, Department of Parks and Recreation, San Diego County, CA** – Mr. Forde assisted with the mapping of vegetation along nine linear miles of potential road alignment within Chino Hills State Park.
- **Ralph Osterling, Riverside County, CA** – Participated in an oak tree survey and led part of the team for the proposed development of a 6500 acre parcel in accordance with the County of Los Angeles Oak Tree Ordinance. More than two hundred and fifty trees tagged and mapped using a Trimble GPS. The team determined the condition of each tree using guidelines set out by the International Society of Arboriculture in a *Guide for Plant Appraisal*.
- **Level 3 Communications, San Diego and Imperial counties, CA, and Yuma County, AZ** – Participated in field surveys for special status species including Algodone's sunflower, Jacumba milk vetch, Pierson's milk vetch, San Diego ambrosia, San Diego thorn mint, slender pod jewel-flower, Tecate tar plant, and Wiggin's croton.

- **Los Angeles Department of Public-Works, Los Angeles County, CA** – Participated in a focused plant survey for the slender-horned spineflower and managed the fieldwork related to the restoration of native habitat.
- **Marshall Canyon Regional Park, Riverside County, CA** – Participated with habitat assessments and focused surveys for Nevin’s barberry, slender mariposa lily, and Parry’s spineflower for a small housing development in the foothills of the San Gabriel Mountains.

### Research Experience

- **Central Valley Habitat Joint Venture, Sacramento County, CA** – The Central Valley Habitat Joint Venture is a multi-agency partnership that includes the USGS, the California Waterfowl Association, the CDFG, Ducks Unlimited, the National Audubon Society, and The Nature Conservancy. Mr. Forde participated in the program in an effort to identify habitat use by a range of waterfowl species including northern pintail, green-winged teal, mallard, and white-fronted geese. Responsibilities included capture using rocket-fired nets and box traps, age and sex classification, attaching transmitters, and tracking movements using aerial and land based telemetry techniques. Location data was determined by triangulation and by the use of Remote Data Systems, Global Positioning Systems, and Geographic Information Systems.
- **United States Geological Survey, Yolo County, CA and California Department of Fish and Game, Sacramento County, CA** – Mr. Forde participated in research specifically aimed at developing a reliable methodology to index the population of the Pacific Coast population of band-tailed pigeons and to document behavior associated with mineral gravelling and its relationship to nesting ecology. Responsibilities included capture using rocket-fired nets and box traps, age and sex classification, attaching transmitters, tracking movements, and locating nests using aerial and land based telemetry techniques. Location data was determined by triangulation and by the use of Remote Data Systems, Global Positioning Systems, and Geographic Information Systems.
- **Ventana Wilderness Sanctuary, Monterey County, CA** – Mr. Forde was involved with the Californian Condor Recovery and Reintroduction Program at Los Padres National Forest. Responsibilities included pre-release conditioning, release, tracking movements using land based telemetry techniques, behavioral observations, habitat use, trapping and handling for replacement of radio transmitters and collecting blood samples, and assisting with supplemental feeding program.
- **Ventana Wilderness Sanctuary, Monterey County, CA** – Monitoring Avian Productivity and Survivorship. Collected data related to demographic parameters, reproductive success, survival, and migration of riparian birds. Responsibilities included capture using mist-nets, species identification, age and sex classification, measuring morphological characteristics, behavioral observations, point counts, nest searching and monitoring, territory mapping, and habitat assessment.
- **University of California, Davis, Raptor Center, Yolo County, CA** – Mr. Forde participated in the rehabilitation and release of federal and state listed raptors including burrowing owl, northern spotted owl, elf owl, great gray owl, bald eagle, golden eagle, Swainson’s hawk, among others and participated in a burrowing owl reintroduction program. Responsibilities included capture and handling, performing physical examinations, collecting blood samples, assisting veterinarians during surgeries and other procedures, providing medication and specialized diets, and conditioning birds for release.

### Education

Animal Biology / University of St Andrews, St Andrews, Scotland  
 Higher National Certificate / 1993 / Biology / Stow College, Glasgow, Scotland

## **Wildlife Workshops**

Sensitive Reptiles & Amphibians of Southern California (The Wildlife Society, 2003)  
Blunt-Nosed Leopard Lizard Identification (The Wildlife Society, 2003)  
Fairy Shrimp of California (Mary Belk, 2003)  
Sensitive Butterflies of San Diego County (Faulkner and Klein, 2003)  
Desert Tortoise Survey & Handling Techniques (The Desert Tortoise Council, 2002)  
Southwestern Willow Flycatcher (Southern Sierra Research Group, 2002)  
Owl Survey Techniques (Kern River Preserve, 2002)  
Desert Mammals (The Desert Institute, 2002)  
Desert Birds (The Desert Institute, 2002)  
Desert Reptiles & Amphibians (The Desert Institute, 2002)  
Springtime Desert Butterflies (San Diego Natural History Museum, 2002)  
Flat-tailed Horned Lizard (United States Fish and Wildlife Service, 2001)  
Burrowing Owl (United States Fish and Wildlife Service, 2001)  
Arroyo Toad Handling Techniques (United States Fish and Wildlife Service, 2001)  
Raptor Capture & Handling Techniques (University of California Davis, 1999)  
Bird Banding & Species Identification (Ventana Wilderness Sanctuary, 1998)

## **Wetland and Regulatory Workshops**

Advanced Wetland Delineation & Management (Richard Chinn Environmental, 2003)  
Wetland Delineation & Management (Richard Chinn Environmental, 2002)  
Navigating Federal & State Permits for Developments in California's Waters (University of California Los Angeles, 2002)  
The Basics of the California Environmental Quality Act (Association of Environmental Professionals, 2002)  
A Systematic Approach to the California Environmental Quality Act (Ultrasystems Environmental, 2001)  
A Systematic Approach to the National Environmental Policy Act (Ultrasystems Environmental, 2001)

**Jeff Johnson**  
*Senior Biologist*

Mr. Johnson is a senior biologist with Impact Sciences and has 13 years experience working in the environmental field. Previously, he worked for the Department of Defense as a natural resources program manager at a Naval Weapons Station where he was responsible for managing numerous wildlife research and compliance projects. In the course of his management for the Navy, he prepared and reviewed Biological Assessments and lead formal and informal consultations, as per Section 7 of the Endangered Species Act, in conjunction with a National Wildlife Refuge on Navy owned land. For several years, he acted as NEPA program manager and has considerable experience with the project review process and written documents, as required by this process.

While employed with Impact Sciences, Mr. Johnson has been involved in the preparation of several Environmental Impact Reports and conducted several biological constraints analysis for the use in preliminary project planning.

Mr. Johnson jointly managed a National Wildlife Refuge with the U.S. Fish & Wildlife Service. He developed and implemented the natural resources management plan that prescribes projects and studies involving a variety of scientific techniques and data collection. Mr. Johnson has successfully negotiated and authored, on behalf of the Navy, a Memorandum of Understanding (MOU) with the U.S. Fish & Wildlife Service for management of the Seal Beach National Wildlife Refuge located on Naval Weapons Station Seal Beach. This MOU diffused a long-standing conflict between the Navy and the Service regarding stewardship responsibilities.

**Representative Project Experience**

- **D.R. Horton, residential development**, Biological Constraints Analysis – Acted as senior biologist in the preparation of a biological constraints report for the development of 400 housing units on a parcel of native land. Client contact is Senior Vice-President of Planning, Dan Boyd.
- **Del Webb California Corp., Sun City Shadow Hills Development**, Biological Resources Section of Environmental Impact Report, City of Indio – Acted as senior biologist in charge of analyzing field data and writing the biological resources section of the EIR including impact analysis of a 806-acre development project.
- **Naval Weapons Station Seal Beach** – While working at Naval Weapons Station Seal Beach, Mr. Johnson actively managed breeding populations of two endangered bird species. He monitored the breeding success and development management strategies to ensure success into the future. His management duties were to assess project impacts, develop mitigation measures, determine appropriate predator control actions and enhance the surrounding habitat. Contact is U.S. Fish & Wildlife Service Refuge Manager, John Bradley.

**Education**

Bachelor and Master of Science, General Biology with an emphasis in Ornithology