National Aeronautics and Space Administration

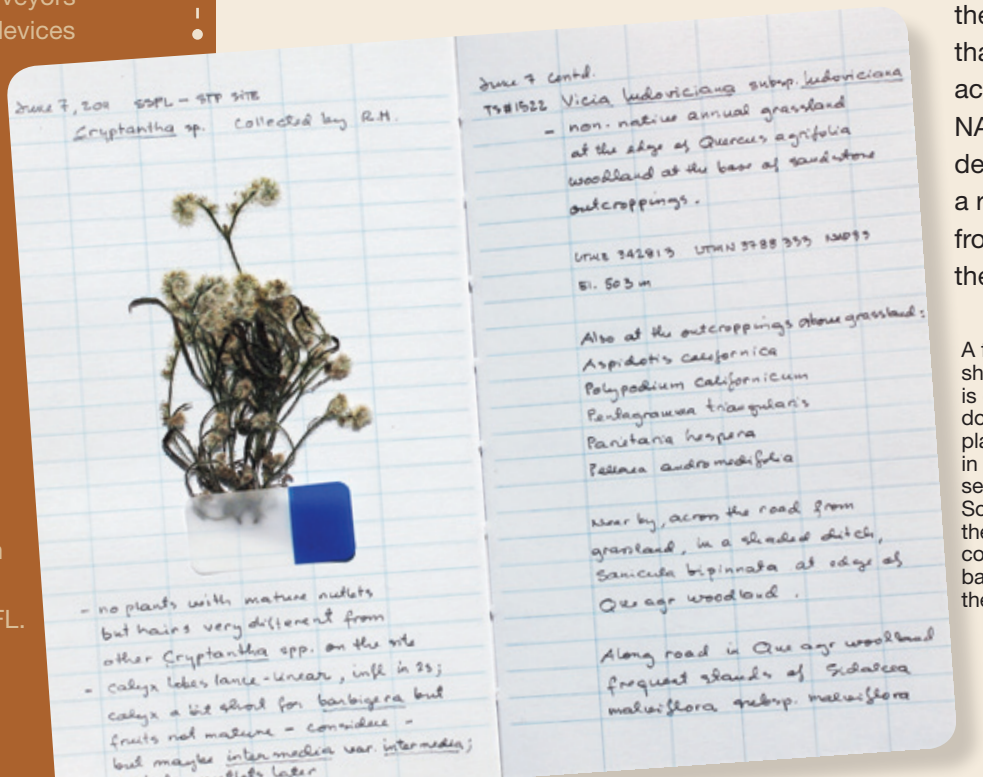
FieldNOTE

JANUARY 2013

An Update on NASA's Cleanup Efforts at Santa Susana Field Laboratory

A Noteworthy Mission

Field biologists have been keeping notes about plants and animals they observe for a very long time. Naturalist Charles Darwin used pen and paper to compile his legendary field notes in the 1830s. A field note can consist of written descriptions, sketches, and an actual specimen in some instances. This assemblage of details captures the sights, numbers, shapes, colors, measurements, behaviors, and other observations. The field note enables others to return to a specific area to verify findings and to document changes over time. In addition to pen and paper, today's surveyors have an array of devices available such as smart phones, iPads, global positioning (GPS) units, and GPS-enabled cameras to record their observations. Some of these devices were used, together with aerial photographs and field data forms in recent surveys conducted at SSFL.



FIELD SURVEYS

Community members wonder about the rich natural setting at SSFL and have asked us to tell them more about plants, animals, and the types of habitats that exist in the area. These requests have been duly noted, FieldNOTE-ed that is.

Initial site-specific field surveys were conducted in 2008 and 2009 as part of the Resource Conservation and Recovery Act (RCRA) Facility Investigations (RFIs). In fall 2010, an up-to-date habitat survey was conducted for the NASA-administered land. Plant and animal surveys were carried out in 2010 and 2011, and wetlands and watercourses were mapped in 2012. These surveys were performed with three primary objectives:

- To characterize the natural habitats that exist or habitats where plants and animals may occur,
- To identify plants and animals present or likely to occur, and
- To document the presence or absence of Federal- or State-protected species

Field data have been compiled giving us a more comprehensive account of the vast and varied landscape, the beauty and diversity of the terrain, and the biological resources that make up the 451.2 acres administered by NASA. Along with this detailed accounting comes a renewed commitment from NASA to protect these resources at SSFL.

A field note shown here is one way of documenting plants observed in their natural setting. Sometimes the notes are completed back in the office.

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NOTES OF INTEREST

Interest in SSFL biological resources is strong, especially among local botanists and wildlife enthusiasts. There remain restrictions to visiting the site but we can provide a "virtual" tour with brief summaries of the surveys and links to more information about the various habitats and what plants and animals have been observed. The inventories have been formatted for printing on your home computer.

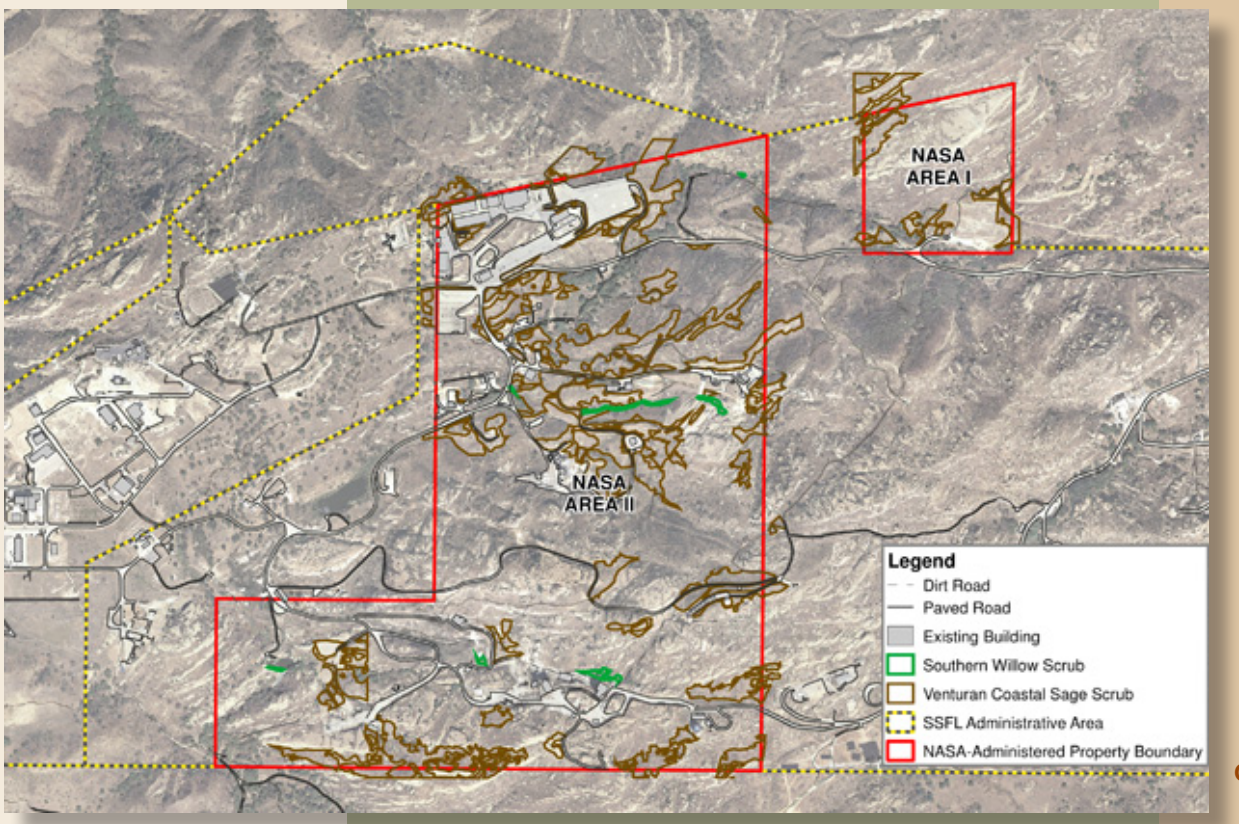
HABITAT SURVEY

A survey was conducted in fall 2010 to identify and characterize the natural communities on NASA-administered land. These communities were evaluated further in a 2011 survey, which yielded up-to-date mapping of the habitats and an understanding of how they are distributed within the landscape. "These maps are essential tools and are being used in evaluating the full range of biological resources," said Randy Dean, a CH2M HILL contractor to NASA. Thirteen different **habitats** occur on NASA-administered properties. (See sidebar). Two of the habitats - southern willow scrub and Venturan coastal sage scrub (see map) – are considered sensitive habitats by the California Department of Fish and Game. In January 2012, NASA completed a wetlands delineation survey that mapped the boundaries of wetland areas (man-made ponds) and drainages. "Identifying the aquatic habitats that exist," said NASA SSFL Project Director Allen Elliott, "helps us better estimate the plant types or aquatic wildlife that may be present. This allows us to assess the kinds of measures that can be taken to protect these resources."

FINDINGS

A variety of habitats occurs across the 451.2 acres of NASA-administered land in SSFL Areas II and portions of Area I.

- **Sandstone Outcrops**
- **Ruderal**
- **Developed**
- **Open Water**
- **Freshwater Marsh**
- **Chaparral**
- **Non-native Grassland**
- **Coast Live Oak Woodland**
- **Coast Live Oak Riparian Forest**
- **Baccharis Scrub**
- **Mule-fat Scrub**
- **Southern Willow Scrub**
- **Venturan Coastal Sage Scrub**



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Lance-leaf Live-forever, *Dudleya lanceolata* is the plant observed at SSFL.

BOTANICAL SURVEY

Preliminary rare plant survey field work was scheduled to correspond with appropriate blooming periods (April, June and August of 2011) and was conducted to verify the types of plants observed in the initial 2010 survey and to identify those considered special-status plant species. The list of special-status plant species that potentially could occur was developed based on information from national, state and county databases, and literature reviews. This research identified 46 special-status plant species in the regional vicinity, 34 of which were considered to have the potential to occur on NASA-administered land. Also generated was a list of species considered unlikely to occur because conditions are unsuitable. An example is the Ventura marsh milk-vetch, *Astragalus pycnostachyus*, which has a habitat of coastal salt marshes and coastal dunes – none of which occurs at SSFL. Examples of plant species observed on NASA-administered land are shown below. A **plant inventory** from the surveys is available.

Humboldt Lily

Shooting Star

Santa Susana Tarplant

More than 3,600 tarplants were identified on NASA-administered property in 2010; the majority was found in Area II and 324 plants in Area I. Their numbers and distribution were similar in 2011.

In the 2011 supplemental botanical survey we further evaluated a variation we observed in *Dudleya lanceolata,* which is found commonly at SSFL. We wanted to verify it was not a plant that is new to SSFL, and not a potentially State-listed species. Botanical keys are often used to identify plant species and the Dudleya family key can be a difficult one. The field team enlisted the expert help of Tarja Sagar, a local botanist with the National Park Service's Santa Monica Mountains National Recreation Area. She guided the team to four separate sites outside of SSFL to observe the State-listed Dudleya species in bloom. She then accompanied the team to different areas within SSFL and she reinforced the team's initial judgment that plant variations we had observed on NASA-administered land were normal for populations of *Dudleya lanceolata* and were non-State-listed species.

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Two-striped Garter Snake

WILDLIFE SURVEY

Unlike plants, wildlife is constantly on the move. Surveying for wildlife (butterflies, amphibians, reptiles, birds, and mammals) was done by directly observing species as well as looking for evidence of their presence. Surveyors recorded signs of nesting and active nests, remnants of food, wildlife prints, tracks or droppings, and bird songs or animal calls. Surveyors looked under logs, rocks, and debris where circumstances permitted. Binoculars were used to search for nests on cliffs, test stands, and other structures. These efforts resulted in a **wildlife inventory** of 60 birds, 15 mammals, 11 reptiles and amphibians, and 11 butterflies. The Federally-listed (Endangered) Least Bell Vireo, and State-listed Loggerhead Shrike and Two-striped Garter Snake were among the species observed during the 2010 and 2011 surveys. Evidence of other Federal- or State-listed species was not found during these visits.

Acorn Woodpecker

Coyote

Loggerhead Shrike

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Photos courtesy of Merrilee Fellows unless otherwise noted.

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This FieldNOTE & inventory lists are available at http://go.nasa.gov/XHlOxW

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Diana Keeney, Mark Osokow and Rosemary Leibowitz from San Fernando Valley Audubon Society help us identify birds at SSFL.

BIRDS OF A FEATHER FLOCK TOGETHER

NASA contractors perform biologic studies to understand the wildlife that inhabits or passes through the federally-owned portions of SSFL. To augment those funded surveys, sometimes we are able to take advantage of offers of help by local experts.

Visitors at the site look to the north from SSFL.

NASA assisted in two small birding expeditions hosted by Boeing at SSFL on April 24 and again on September 19, 2012. The first visit was a daytime tour to see, generally, how many birds could be observed in one day throughout the entire site (answer: 60). The outing in September was a nighttime small “owling” expedition to various pre-determined habitats.

Western Screech Owl at SSFL

Real Night Owls

That September night, three species of owls were observed at SSFL: Western Screech Owl, Barn Owl and Great Horned Owl. The Western Screech Owl, *Megascops kennicottii*, is strictly a nocturnal feeder known as a “sit and wait” predator using camouflage and timing to find prey such as small mammals, snakes, frogs and insects. Imagine the owl’s surprise to look down and see the glare of flood light and human faces staring back. This **photograph** captures the owl’s characteristic piercing yellow eyes. Western Screech Owls stand roughly eight and a half inches tall and are mostly gray and brown.

Imagine the owl’s surprise to look down and see the glare of flood light and human faces staring back.

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An observer near WS-9A looks west.

The Great Horned Owl, *Bubo virginianus,* is the one most often heard in our urban Southern California environment. The male and female can be distinguished by voice, with the female making the higher vocalization. Towards the end of this **audio clip** of coyotes calling, we were fortunate to record the call of this male and female "duet". Listen closely to the higher-pitched female calling first, followed by the lower-pitched call of the male. This was recorded on Area IV, with the owls roosting on the Sodium Pump Test Facility.

The "Un"-Common Poorwill

It is interesting that this bird is called Common because it exhibits a rare ability among its fellow friends of flight. The Common Poorwill, *Phalaenoptilus nuttallii*, is able to hibernate, or go into torpor, dropping its body temperature and rate of respiration for days or weeks at a time. It is a bird heard far more often than it is seen. Its call sounds of a bird lamenting its moniker – *Poor will, poor will.* **Click here** for a recording taken on September 19.

Also Appearing to Glowing Reviews

By day, the Stripe-tailed Scorpion, *Paruroctonus silvestrii,* can be considered shy, lying low on the cool underside of rocks or in underground holes. Really, the scorpion is photophobic and avoids the light of day to evade the attention of hungry predators. But at night, that same nocturnal hunter and feeder can really put on a show! And perform it did on September 19 at SSFL. You see, when exposed to certain wavelengths of ultraviolet (UV) light, like that of a black light, the scorpion glows due to the presence of fluorescent chemicals in its cuticle. This **photo**, (slightly blurry in the absence of a flashbulb, which would have canceled the fluorescence visible by black light) shows the glow of the scorpion seen that night.

Photos courtesy of Merrilee Fellows unless otherwise noted.

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