

University of California Santa Barbara

Natural Reserve System

Sedgwick Reserve



ANNUAL REPORT

July 1, 2010 – June 31, 2011

PART 1: RESERVE USE DATA

	Home Institution		UC Campus		CSU Campus		Community College		Other CA Campus		Out of State		International		Public Services		TOTALS	
	Users	UDays	Users	UDays	Users	UDays	Users	UDays	Users	UDays	Users	UDays	Users	UDays	Users	UDays	Users	UDays
Research Faculty	16	65	7	32	1	1	1	3			5	387			2	10	32	498
Research Scientist	28	238	13	73	0	0	0	0			0	0			6	11	47	322
Research Assistant	37	406	7	63	0	0	0	0			5	499			1	2	50	970
Research Graduate	47	415	23	50	3	9	0	0			8	574			0	0	81	1048
Research Undergraduate	5	137	0	0	0	0	1	3			0	0			0	0	6	140
Subtotal	133	1261	50	218	4	10	2	6			18	1460			9	23	216	2978
University Instructor	29	37	11	125	8	12	2	2			2	8			1	1	53	185
University Student	353	400	140	1387	110	160	23	23			14	56			25	25	665	2051
Subtotal	382	437	151	1512	118	172	25	25			16	64			26	26	718	2236
K12 Instructor	16	16	0	0	0	0	0	0			0	0			73	88	89	104
K12 Student	403	403	0	0	0	0	0	0			0	0			500	579	903	982
Government	14	14	0	0	0	0	0	0			0	0			1	1	15	15
Non Profit Organization	1	1	6	12	0	0	0	0			0	0			247	536	254	549
For Profit Business	0	0	0	0	0	0	0	0			0	0			8	188	8	188
Volunteer	354	1380	27	87	0	0	4	8			1	21			849	849	1235	2345
Other	293	769	5	13	0	0	1	3			2	185			939	977	1240	1947
Subtotal	1081	2583	38	112	0	0	5	11			3	206			2617	3218	3744	6130
TOTALS	1596	4281	239	1842	122	182	32	42			37	1730			2652	3267	4678	11344

PART 2: RESERVE USERS' AFFILIATIONS

1. University of California Santa Barbara

University of California Santa Barbara

2. University of California Campus

Cornell University
 UC Berkeley
 UC Davis
 UC Davis
 UC Irvine
 UC Los Angeles
 UC Riverside
 UC Santa Cruz

3. California State University Campus

CSU Long Beach
 CSU Long Beach
 CSU Fullerton

4. California Community College

Butte College

5. Out of State College or University

Cornell University
 Duke University
 Green Mountain College
 Michigan State University
 University of Washington
 University of Wisconsin

6. K-12 Instructor

Adams School, Santa Barbara School District
 Family Partnership Charter School
 K-12 Schools buellton
 K-12 Schools Los Olivos
 K-12 Schools Santa Ynez
 K-12 Schools Solvang
 Pacifica High School Health Science Academy
 santa maria bonita school district/ Adam elementary school
 Santa Ynez Valley Charter School
 Channel Islands Cooperative School

7. K-12 Student

K-12 Schools Ballard
 K-12 Schools Santa Barbara

8. Others

Dunn Middle School
 Sedgwick Reserve

PART 3: USE BY INSTRUCTIONAL GROUPS

Landscape Painting with an Artist and a Naturalist: ART CS 101. UC Santa Barbara, College of Creative Studies. Hank Pitcher (2x)

Ecology of Managed Ecosystems: ESM 201. UC Santa Barbara, Bren School of Environmental Science and Management. Frank Davis (3x)

Ecology & Management of California's Wildlands: ES/EEMB 119, UC Santa Barbara, Ecology, Evolution and Marine Biology. Nicole Molinari (x2)

Crew Production: Film 106. UC Santa Barbara, Film and Media Department, Frederick Russell (7x)

Biological community survey and analysis: ESM 212. UC Santa Barbara, Bren School of Environmental Science and Management, Frank W Davis (4x)

Measuring our Environment: Geog 175. UC Santa Barbara, Geography. Dar A Roberts (x2)

CCBER Curatorial Internship – Lichens: EEMB 184. UC Santa Barbara, Ecology, Evolution and Marine Biology, Karen A Stahlheber (x2)

Plant field ecology: EEMB 166. UC Santa Barbara, Ecology, Evolution and Marine Biology. Erin A Mordecai

Field Studies in Environment & History: Hist 197. UC Santa Barbara, History & Environmental Studies. Peter S Alagona (x2)

Film and Media Studies 108: Short Production. UC Santa Barbara, Film and Media Studies. Cora K Hirashiki (x2)

Intro Biology: Biol CS 30, UC Santa Barbara, Institute for Computational Earth System Science. Claudia Tyler (x2)

Natural History of Coastal Environments: SIO 275B. UC San Diego, Scripps Institution of Oceanography. Richard D Norris

Advanced Architectural Design: ARCH 451, Cal Poly, San Luis Obispo, Architecture. Margot K McDonald (x4)

Astronomy: EARTH101, Santa Barbara City College, Earth & Planetary Sciences. Fred Marschak

PART 4: CURRENT RESEARCH

Private/NGO

SELF-FUNDED	Chris Grinter	Cal Academy of Sciences	Survey of California Lepidoptera with special attention to the microlepidoptera.	10211	on-going
SELF-FUNDED	John Martinez	Las Cumbres Observatory	Commissioning, operation, and maintenance of the Sedgwick Observatory and telescope for astronomical research into extrasolar planets, supernovae, and other time-domain astrophysical research.	20689	on-going

Out of State University (9)

NSF AND PACKARD FOUNDATION GRANTS	Janneke Hillerislambers	University of Washington	The role of stabilizing and equalizing processes in maintaining the diversity of California annual serpentine communities (CANDI)	5611	on-going
supported by unspecified grant	John Orrock	Washington University	The role of native consumers in the interactions between native and exotic plant species	4123	ending
SELF-FUNDED	Emily L Dittmar	Michigan State University	The genetic basis of serpentine adaptation in <i>Leptosiphon</i>	23699	new multi-year
National Science Foundation (NSF)	Eric Seabloom	Oregon State University	The role of seed limitation, resource competition, and community complementarity in invasions and restoration	1739	inactive
SELF-FUNDED	Walt Koenig	Cornell	California acorn survey	1702	on-going
supported by unspecified grant	Walt Koenig	Cornell	Reproductive ecology of <i>Quercus lobata</i> (pollen collection)	19705	on-going
SELF-FUNDED	Paul Durst	Duke	Parasites of Deer Mice	22076	new multi-year
SELF-FUNDED	Stan Harpole	Iowa State University	Effects of chronic nitrogen deposition on grassland communities	1756	inactive
SELF-FUNDED	Stan Harpole	Iowa State University	Long term patterns of plant diversity and composition	1755	inactive

University of California Santa Barbara (26)

National Science Foundation (NSF)	Benjamin Gilbert	UCSB	Exotic plants and extinction debts	19642	ending
no info given	David Viola	UCSB	Local adaptation of serpentine annual plants	19856	ending
SELF-FUNDED	Burch Fisher	UCSB	Channel Initiation Thresholds Through Ultra High-Resolution Topography	10409	ending
SELF-FUNDED	Claudia Tyler	UCSB	Effects of cattle grazing on grasslands	19312	ending
SELF-FUNDED	Lars Bildsten	UCSB	Palomar Transient Factory	23059	new 1 year
supported by unspecified grant	John Priester	UCSB	Evaluating the Effects of Nanoparticles on Soybean Plants in a Planted Soil Mesocosm	23410	new 1 year
FULBRIGHT FELLOWSHIP	Oscar Godoy	UCSB	Application of niche coexistence theory to evaluate the invasibility of Mediterranean-type ecosystems	22626	new multi-year
no info given	Baoming Chen	UCSB	Allelopathic potential of non-native grass litter	23857	new multi-year
no info given	Claudia Tyler	UCSB	alley oak seedling competition with near neighbors	22728	new multi-year
NSF Grant	Peter S Alagona	UCSB	UC Natural Reserve System Archive	22862	new multi-year
PACKARD FOUNDATION GRANT	Benjamin Gilbert	UCSB	Ecological Drift in Annual Plant Communities	22378	new multi-year
SELF-FUNDED	Lynn Gamble	UCSB	Archaeological Investigations at Sedgewick Reserve	23667	new multi-year
SELF-FUNDED	Nate Emery	UCSB	affect of fog on plant moisture and how that moisture affects the flammability of plants.	23057	new multi-year
SELF-FUNDED	Sam Prentice	UCSB	Assessing scale-dependent soil process domains with high resolution DEM	23384	new multi-year
SELF-FUNDED	Yang Lin	UCSB	Photodegradation of Bromus diandrus thatch in a semi-arid grassland	23689	new multi-year
National Science Foundation (NSF)	Frank Davis	UCSB	From microscale to macroecology	23874	new, cancelled
HENRY LUCE FOUNDATION GRANT	Christian H Balzer	UCSB	Effects of fluctuations in nitrogen and water availability on grassland community structure	21080	on-going
Kearney Foundation of Soil Science Grant	ShiShi Liu	UCSB	Evaluating Soil-Water-Vegetation Relations of Different Ecosystems in Southern California Using Airborne Visible/Infrared Imaging Spectrometer (AVIRIS) Data	21443	on-going
Mathias Grant	Karen Stahlheber	UCSB	Natural heterogeneity and the structure of invaded communities: the role of oaks in California grasslands	9731	on-going
Mathias Grant	Nicole Molinari	UCSB	The effect of resource heterogeneity on native forb success	20805	on-going
NASA Terrestrial Ecology Program Grant	Keeley Roth	UCSB	Phenology of Chaparral and Coastal Sage Scrub Species	19719	on-going
SELF-FUNDED	Carla D'Antonio	UCSB	Nutrient Network: A Cross-Site Investigation Of Bottom-Up Control Over Herbaceous Plant Community Dynamics And Ecosystem Function.	9822	on-going
SELF-FUNDED	Claudia Tyler	UCSB	The role of water stress (drought) in oak seedling and sapling survival and performance at Sedgewick Reserve	1784	on-going
SELF-FUNDED	David Viola	UCSB	Evolutionary tradeoff between serpentine tolerance and competitive ability	21756	on-going
SELF-FUNDED	Eliza Bradley	UCSB	Sedgewick CCLI Micromet Tower	8830	on-going
supported by unspecified grant	Nicole Molinari	UCSB	Resistance of native and non-native vegetation under global change scenarios	10560	on-going

Other University of California (16)

KEARNEY FOUNDATION OF SOIL SCIENCE	Catherine Osborne	UC Berkeley	The combined drought strategies of soil microbial communities shape wet-up CO2 pulses in Mediterranean annual grasslands	21551	ending
no info given	Dick Sage	UC Berkeley	Ecological studies of the Valley Oak (<i>Quercus lobata</i>)	6938	ending
SELF-FUNDED	Gregory M Crutsinger	UC Berkeley	Insect diversity on coyote bush	22081	new 1 year
KEARNEY FOUNDATION OF SOIL SCIENCE	Erin Nuccio	UC Berkeley	Soil Microbial Biogeography in California Grasslands	20036	on-going
USDA Forest Service GRANT	Hugh D Safford	UC Davis	A study of the interacting effects of grazing and productivity on California annual grassland composition and biodiversity	21366	on-going
Mathias Grant	Stephanie Kivlin	UC Irvine	How well can fungi migrate under a changing climate?	21188	on-going
National Science Foundation (NSF)	Claudia I Cziczik	UC Irvine	Dynamics of nonstructural carbon in oaks native to California	9479	on-going
Lawrence Livermore National Laboratory Grant	Guntram R von Kiparski	UC Riverside	Isotope Forensics of Perchlorate in Groundwater	22258	new 1 year
NSF Grant	Matthew Wolak	UC Riverside	Evolutionary genetics of adaptive traits: examining the genetic architectures of morphological traits	23694	new 1 year
NSF Grant	John Thompson	UC Santa Cruz	Geographic mosaics in diversifying plant/insect interactions	1910	on-going
SELF-FUNDED	Victoria Sork	UCLA	Seed predation of acorns by curculionid insects	22509	new 1 year
SELF-FUNDED	Christopher Johnson	UCLA	Mechanisms of species coexistence in insect communities	22790	new multi-year
SELF-FUNDED	Emily Curd	UCLA	A metagenomic study of soil microbial community carbon cycling under various vegetation types	23697	new multi-year
SELF-FUNDED	Paul Gugger	UCLA	California oak phylogeography and genomics	23311	new multi-year
NSF Grant	Victoria Sork	UCLA	Seed dispersal of oaks	8796	on-going
SELF-FUNDED	Andy Lentz	UCLA	Phenology of <i>Quercus lobata</i> on the Sedgwick Reserve in the Figueroa watershed	19460	on-going

California State University (2)

Geological Society of America	Christine P. Brown	Cal State Long Beach	A Stable Isotope Study of Fluid-Rock Interactions in the Franciscan Formation	23299	new multi-year
AMERICAN CHEMICAL SOCIETY GRANT	Nate Onderdonk	Cal State Long Beach	An investigation of kinematic indicators along the Little Pine Fault tectonic history of the Little Pine Fault system.	20106	on-going

PART 5: PUBLICATIONS

Abraham, S. T., Zaya, D.N, Koenig, W.D. and M. V. Ashley. 2011. Interspecific and Intraspecific Pollination Patterns of Valley Oak, *Quercus lobata*, in a Mixed Stand in Coastal Central California. *International Journal of Plant Sciences* 172(5): 691-699.

Brandt, A., and E.W. Seabloom. 2011. Regional and decadal patterns of native and exotic plant coexistence in California grasslands. *Ecological Applications* 21(3): 704-714.

Brandt, A. 2011. The roles of provenance and phylogeny in recruitment, community assembly, and species coexistence in invaded California grasslands. PhD Dissertation, Zoology, Oregon State University.

Craine, J. M., N. Fierer, and K. K. McLaughlan. 2010. Widespread coupling between the rate and temperature sensitivity of organic matter decay. *Nature Geoscience* 3: 854-857.

Davis, F. W., Tyler, C. M and B.E. Mahall. 2011. Consumer control of oak demography in a Mediterranean-climate savanna. *Ecosphere* 2(10).

Dooley, S. and K. Tresseder. 2011. The effect of fire on microbial biomass: a meta-analysis of field studies. *Biogeochemistry*: 1-13.

Everard, K., Seabloom, E.W., Harpole, S. and C. de Mazancourt. 2010. Plant Water Use Affects Competition for Nitrogen: Why Drought Favors Invasive Species in California. *American Naturalist* 175(1): 85-97.

Farrell, K. A. 2011. Vertebrates, arthropods, and invasive plants: an investigation of the top-down and bottom-up interactions of multiple herbivore guilds in a grassland system. PhD dissertation, Zoology Department, Oregon State University.

- Fulton, B. J., A. Shporer, et al. 2011. Long-term Transit Timing Monitoring and Refined Light Curve Parameters of HAT-P-13b. *The Astronomical Journal* 142(3): 84.
- Gilbert, B. and J. R. Bennett. 2010. Partitioning variation in ecological communities: do the numbers add up? *Journal of Applied Ecology* 47: 1071–1082.
- Holden, P., Schimel, J.P. and D.D. Roux-Michollet. 2010. Pushing the limits for amplifying BrdU-labeled DNA encoding 16S rRNA: DNA polymerase as the determining factor. *Journal of Microbiological Methods* 83(3): 312-316.
- Holden, P. A., Schimel, J.P., Wetterstedt, J.A. Martin and S.E. Trumbore. 2010. Drying/rewetting cycles mobilize old C from deep soils from a California annual grassland. *Soil Biology and Biochemistry* 43(5): 1101-1103.
- Koenig, W. D., J. M. H. Knops, et al. 2010. Testing the environmental prediction hypothesis for mast-seeding in California oaks. *Canadian Journal of Forest Research* 40(11): 2115-2122.
- Law, N. M., Kraus, A.L., Street, R., Fulton, B.J., Hillenbrand, L.A., et al. 2011. Three New Eclipsing White-dwarf - M-dwarf Binaries Discovered in a Search for Transiting Planets Around M-dwarfs. *Journal of Astrophysics arXiv:1112.1701v1*: 1-14.
- Levitan, D., B. J. Fulton, et al. 2011. PTF1 J071912.13+485834.0: An Outbursting AM CVn System Discovered by a Synoptic Survey. *The Astrophysical Journal* 739(2): 68.
- Mordecai, E. A. 2011. Pathogen impacts on plant communities: unifying theory, concepts, and empirical work. *Ecological Monographs* 81: 429-441.
- Navarro-García, F., Casermeiro, M.A. and J.P. Schimel. 2011. When structure means conservation: Effect of aggregate structure in controlling microbial responses to rewetting events. *Soil Biology and Biochemistry* 44(1): 1-8.
- Orrock, J. L. 2010. Refuge-mediated apparent competition in plant–consumer interactions. *Ecology Letters* 13(1): 11-20.
- P.B. Adler, et. al. 2011. Productivity Is a Poor Predictor of Plant Species Richness. *Science* 333: 1750-1759.
- Sage, R. D., Koenig, W. D. and B. C. McLaughlin. 2011. Fitness consequences of seed size in the valley oak & *Quercus lobata* Née (Fagaceae). *Annals of Forest Science* 68(3): 477-484.
- Sánchez-Humanes, B., Sork, V., and J. Espelta. 2011. Trade-offs between vegetative growth and acorn production in *Quercus lobata* during a mast year: the relevance of crop size and hierarchical level within the canopy. *Oecologia* 166(1): 101-110.
- Schaeffer, S. M., Boot, C. and J.P. Schimel. 2011. Seasonal drought, microbial threshold responses, and biogeochemical cycles in Mediterranean ecosystems. 96th ESA Conference, Austin, TX.
- Schimel, J. P., Boot, C., Holden, P., Roux-Michollet, D., Parker, S., Schaeffer, S. and Treseder, K. 2010. The Biogeochemistry of Drought. 19th World Congress of Soil Science, Soil Solutions for a Changing World. Brisbane, Australia.
- Schimel, J. P., Treseder, K. K., Garcia, M. O. and Whiteside, M. D. 2010. Slow turnover and production of fungal hyphae during a California dry season. *Soil Biology and Biochemistry* 42(9): 1657-1660.
- Scofield, D. G., Alfaro, V.R., Sork, V.L., Grivet, D., Martinez, E., Papp, J., Pluess, A. R., Koenig W. D. and P. E. Smouse. 2010. Foraging patterns of acorn woodpeckers (*Melanerpes formicivorus*) on valley oak (*Quercus lobata* Née) in two California oak savanna-woodlands. *Oecologia* 166:187-196.
- Scofield, D. G., V. L. Sork and P. E. Smouse. 2010. Influence of acorn woodpecker social behaviour on transport of coast live oak (*Quercus agrifolia*) acorns in a southern California oak savanna. *Ecology* 98: 561-572.
- Seabloom, E. W., Borer, E.T., Mitchell, C.E., and A.G. Power. 2010. Viral diversity and prevalence gradients in North American Pacific Coast grasslands. *Ecology* 91(3): 721-732.
- Sork, V. L., Davis, F.W., Westfall, R., Flint, A. Ikegami, M., Wang, H., and D. Grivet. 2010. Gene movement and genetic association with regional climate gradients in California valley oak (*Quercus lobata* Née) in the face of climate change. *Molecular Ecology* 19: 3806–3823.
- Sork, V. L. and L. Waits. 2010. Contributions of landscape genetics – approaches, insights, and future potential. *Molecular Ecology* 19(17): 3489–3495.
- Steinfadt, J. D. R., L. Bildsten, et al. 2011. A Search for Pulsations in Helium White Dwarfs. *Publications of the Astronomical Society of the Pacific* 124(911): 1-13.

Thompson, J. N., Laine, A.L. and J.F. Thompson. 2010. Retention of mutualism in a geographically diverging interaction. *Ecology Letters* 13: 1368-1377.

Todd-Brown, K., Hopkins, F.M., Kivlin, S.N., Talbot, J.M. and S. D. Allison. 2011. A framework for representing microbial decomposition in coupled climate models. *Biogeochemistry* (in press).

Treseder, K. K., Kivlin, S. N. and Hawkes, C. V. 2011. Evolutionary trade-offs among decomposers determine responses to nitrogen enrichment. *Ecology Letters* 14: 933–938.

Viola, D. V., Mordecai, E.A., Jaramillo, A.G., Sistla, S.A., Albertson, L.K., Gosnell, J.S. Cardinale, B.J. and J. M. Levine. 2010. Competition–defense tradeoffs and the maintenance of plant diversity. *PNAS* 107(40): 17217-17222.

von Kiparski, G.R., Parker, D.R. and D.J. Hillegonds. 2011. A simplified method for obtaining high-purity perchlorate from groundwater for isotope analyses. *Technical Report LLNL-TR-479291*. Lawrence Livermore National Laboratory

Werth, S. and V. L. Sork. 2010. Identity and genetic structure of the photobiont of the epiphytic lichen *Ramalina menziesii* on three oak species in southern California. *Am. J. Bot.* 97: 821-830.

PART 6: NARRATIVE

Research

Fifty-one research projects were handled by Reserve staff during the fiscal year. Twenty-one projects were new and 22 were on-going. Fourteen projects were completed by the end of the reporting period. An additional five projects posted no activities during the fiscal year although they remain active on the Sedgwick research roster and/or have research equipment still in place. A listing of the research categories follows below.

In 2010-2011, researchers spent 2978 days working on 51 projects for an average of 58 days per project. As in previous years, the majority of research conducted at Sedgwick was done during day-only visits. UCSB researchers had both the most projects (26) and the most user days (1261). Researchers from other UC campuses were the second most frequent users with 16 projects and 218 user days. The remaining projects were completed by Out of state universities (8 projects, 1460 user days), Cal State Universities (2) and two from non-profit agencies (California Academy of Science; Las Cumbres Global Telescope Network).

Of those applications that reported grant support information (47 of 51) 53% of the projects (25) received some level of grant funding and the other 47% (22) reported being self-funded. Thirty-six (36) publications were published during 2010-11 using Sedgwick data.

New multi-year projects initiated in the fiscal year (16) included: *Parasites of Deer Mice* (Paul Durst, Duke University); *Isotope Forensics of Perchlorate in Groundwater* (Guntram R von Kiparski, UC Riverside); *Ecological Drift in Annual Plant Communities* (Benjamin Gilbert, UCSB); *Mechanisms of species coexistence in insect communities* (Christopher Johnson, UCLA); *Application of niche coexistence theory to evaluate the invisibility of Mediterranean-type ecosystems* (Oscar Godoy, UCSB); *Effect of fog on plant moisture and how that moisture affects the flammability of plants* (Nate Emery UCSB); *California oak phylogeography and genomics* (Paul Gugger, UCLA); *UC Natural Reserve System Archive* (Peter S Alagona, UCSB); *Assessing scale-dependent soil process domains with high resolution DEM* (Sam Prentice, UCSB); *Photodegradation of Bromus diandrus thatch in a semi-arid grassland* (Yang Lin, UCSB); *A metagenomic study of soil microbial community carbon cycling under various vegetation types* (Emily Curd, UCLA); *The genetic basis of serpentine adaptation in Leptosiphon* (Emily L Dittmar, Michigan State University); *Allelopathic potential of non-native grass litter* (Baoming Chen, UCSB); *Archaeological Investigations at Sedgwick Reserve* (Lynn Gamble, UCSB); *From microscale to macroecology* (Frank Davis, UCSB); *A Stable Isotope Study of Fluid-Rock Interactions in the Franciscan Formation* (Christine P. Brown, Cal State Long Beach);

Projects started and completed in the fiscal year (5) include *Insect diversity on coyote bush* (Greg Crutsinger, UC Berkeley); *Seed predation of acorns by curculionid insects* (Victoria Sork, UCLA); *Evaluating the Effects of Nanoparticles on Soybean Plants in a Planted Soil Mesocosm* (John Priester, UCSB); *Palomar Transient Factory* (Lars Bildsten, UCSB); *Evolutionary genetics of adaptive traits: examining the genetic architectures of morphological traits* (Matthew Wolak, UC Riverside).

Multi-year projects completed in the fiscal year (8) included *Native consumers* (John Orrock Washington University); *Ecological studies of the Valley Oak (Quercus lobata)* (Dick Sage, UC Berkeley); *Channel Initiation Thresholds Through Ultra High-Resolution Topography* (Burch Fisher, UCSB); *Effects of cattle grazing on grasslands* (Claudia Tyler, UCSB); *Local adaptation of serpentine annual plants* (David Viola, UCSB); *The combined drought strategies of soil microbial communities shape wet-up CO₂ pulses in Mediterranean annual grasslands* (Catherine Osborne, UC Berkeley); *Exotic plants and extinction debts* (Benjamin Gilbert UC Santa Barbara)

On-going projects (22) include: *Lepidoptera survey* (Chris Grinter, California Academy of Sciences); *The role of stabilizing and equalizing processes in maintaining the diversity of California annual serpentine communities (CANDI)* (Janneke Hillerislambers, University of Washington); *Reproductive ecology of Quercus lobata* (Walt Koenig, Cornell University); *plant/insect interactions* (John Thompson UC Santa Cruz); *Oak phenology* (Andy Lentz UC Los Angeles); *Seed dispersal of oaks* (Victoria Sork, UC Los Angeles); *California acorn survey* (Walt Koenig, Cornell); *Testing environmental tolerances of Avena grasses* (Benjamin Gilbert, UC Santa Barbara); *Resistance of native and non-native vegetation* (Nicole Molinari, UC Santa Barbara); *The effect of resource heterogeneity on native forb success* (Nicole Molinari, UCSB); *Effects of fluctuations in nitrogen and water availability on grassland community structure* (Christian Balzer, UCSB); *Role of oaks in California grasslands* (Karen A Stahlheber UC Santa Barbara); *Sedgwick CCLI Micromet Tower* (Dar Roberts UC Santa Barbara); *NUTNET* (Carla D'Antonio University of California Santa Barbara); *Evaluating Soil-Water-Vegetation Relations of Different Ecosystems in Southern California Using Airborne Visible/Infrared Imaging Spectrometer (AVIRIS) Data* (ShiShi Liu, UCSB); *An investigation of kinematic indicators along the Little Pine Fault tectonic history of the Little Pine Fault system* (Nate Onderdonk, Cal State Long Beach); *Sedgwick Observatory and telescope for astronomical research into extrasolar planets, supernovae, and other time-domain astrophysical research* (John Martinez, Las Cumbres Observatory); *Soil Microbial Biogeography in California Grasslands* (Erin Nuccio, UC Berkeley); *A study of the interacting effects of grazing and productivity on California annual grassland composition and biodiversity* (Hugh Safford UC Davis); *Dynamics of nonstructural carbon in oaks native to California* (Claudia Czimczik, UC Irvine); *How well can fungi migrate under a changing climate?* (Stephanie Kivlin, UC Irvine); *Phenology of Chaparral and Coastal Sage Scrub Species* (Keeley Roth, UCSB)

Inactive projects with research equipment left in place (5): *The role of seed limitation, resource competition, and community complementarity in invasions and restoration* (Eric Seabloom, University of Minnesota, Date of last activity/visit: May 2009); *Effects of chronic nitrogen deposition on grassland communities* (Stan Harpole, Iowa State University Date of last activity/visit: May 2009); *Long term patterns of plant diversity and composition* (Stan Harpole, Iowa State University Date of last activity/visit: May 2009); *Effects of cattle grazing on grasslands* (Claudia Tyler, UCSB Date of last activity/visit: June 2009); *The role of native consumers in the interactions between native and exotic plant species* (John Orrock, University of Wisconsin, Date of last activity/visit: February 2011).

No proposed research projects were canceled or rejected in FY10-11 although one project, *From microscale to macroecology* (Frank Davis, UCSB) was canceled soon after it was approved when a comparative site in the nearby national forest could not be secured.

	UCSB (25)	OTHER UC (16)	CAL STATE (2)	OUT OF STATE (6)	GOV'T (2)	TOTALS
STATUS						
New	11	7	1	2	0	21
On-going	10	7	1	3	2	23
Completed	4	2	0	1	0	7
FUNDING						
Grant funded	9	8	2	2	0	21
Self-funded	11	6	0	2	2	21
Unspecified	5	2	0	2	0	9
USE						
User days	1261	218	10	1460	536	3485
REVENUE						
Facility use	\$466	\$164	\$0	\$564	\$0	\$1,194

University Instruction

University level class use increased in FY 2010-11 with 34 classes consisting of 665 students using the reserve for 2051 user days – up from just 8 in the previous year.

As in previous years the majority of classes (28 of 34) originated from UCSB. Of those classes emanating from UCSB 9 (32%) were from the Film and Media Studies Department, a new use of the Reserve (and not one that will continue due to hard use on the reserve and its facilities by film crews). The remaining 19 were from UCSB College of Creative Studies, Ecology, Bren School, Geography, Institute for Computational Earth System Science, History and Environmental Studies Departments. Classes that came from other schools (6) include an architecture class from Cal Poly, San Luis Obispo; an Astronomy Observation Earth & Planetary Science class from SB City College; a Psychology in Nature class from Pacifica Graduate Institute; field Biology from Green Mountain College in Vermont; and an Ecology class from and UC San Diego.

Public Outreach

Outreach programs continued to be active on the reserve throughout 2010-2011. In summary, 903 school-aged youth, 89 teachers and 2,475 adults visited the reserve during the year as part of the organized outreach programs detailed below. Volunteers donated 2,345 user days benefiting the reserve and its programs.

K-12 educational highlights of the year included the continuation of the Sedgwick Outdoor Classroom program. Out of the 903 school age students who visited, 384 were fourth graders, 148 were fifth grade and 164 were sixth grade, and the remainder ranged between kindergarten and high school levels.

Public access days offered during this fiscal year included nine public hikes led by docents, and were attended by 379 members of the public.

Sedgwick also hosted numerous on-site events including: the July celebration of the Sedgwick Historic Barn renovation (75 attendees, inclusive of docents); the August Byrne Observatory at Sedgwick (BOS) dedication (50 attendees); multiple "Star Parties" sponsored by LCOGT, two of which were auction winners, two of which included LCOGT employees, Direct Relief International and Linked organizations. (181 attendees, 3 docents). The final LCOGT (Las Cumbres Observatory Global Telescope Network) "Star Party" was held in October. Sixteen guests, eight LCOGT employees, two docents along with the Sedgwick Outreach Coordinator were in attendance. The annual Docent/Volunteer Holiday Open House was enjoyed by 53 docents and/or guests (spouses, family) on December 12th. All on-site events include docent-led hikes and/or Sedgwick natural history presentations.

Other on-site events included: the Santa Ynez Women Hikers Hike (23), the Channel City Camera Club wildflower field trip (24), the Santa Barbara Botanic Garden Natural History Hike with Fred Emerson (22), the Santa Ynez Band of Chumash Indians 2011 Winter Hike (12), the Tipton Meeting House dedication, attended by 100 people including Chancellor Henry Yang, the Retreat for Grant Making Committee Fund for Santa Barbara (20), and the California Student Sustainability Coalition Winter Retreat (18 people 4 days)

Other organized events included three docent communication meetings during the year and rock collecting for the Tipton Building in July (24 docents) and an August docent gathering at Andersen Overlook watch the full moon rise. (10 docents) The California Art Club held a paint-out in August (20 artists) and the Santa Barbara Food Bank's annual retreat was held in the Ranch House (18 attendees).

The first 2010-2011 "Astronomy" Outdoor Classroom field trip took place in September with 15 students, 1 teacher, 1 administrator and three docents attending. The "Tour of the Night Sky" was presented by five Santa Barbara Astronomical Unit volunteers.

Offsite events included a docent trip to Santa Cruz Island; a compass review class taught by docent, Laura Baldwin, at Los Olivos School for the Outdoor Classroom 6th graders; and an Outdoor Classroom workshop held in Santa Maria that included the 4th grade teachers from Los Olivos and Ontiveros Schools, the principal from Los Olivos, four Sedgwick Outdoor Classroom docents.

The Native Plant nursery and restoration work was maintained weekly by several docents and volunteers throughout the year. One equestrian ride was organized that included eight riders and two docents.

Sedgwick birders accounted for 157 user days throughout the year. Eight docents performed trail maintenance and twenty volunteers visited the reserve to hike accounting for 87 user days. Volunteers in the reserve's native plant nursery contributed over 900 user days to help with native plant restoration projects, assisting in the nursery and watering plants.

In October twenty-three docents attended a continuing education class on "Working with Children in Nature." Eight docents, two guests and Kate McCurdy participated in this year's annual Santa Barbara County bird count.

In April, 12 docents graduated from the 2010-2011 Docent Training program that began on November 5 and continued thereafter on every Friday, except during the holidays. The 2011 Docent Class includes the following members: Jens Agergaard, Dana Anderson, Ina Brittain, Diane de Avall-Arce, Margot Doohan, Marge Erickson, Brenda Juarez, Gene Mamath, Dan Rohr, Tom Small, Beth Sprague and Sue Sundholm.

Stewardship

It was an above average rainfall year for the Reserve, with the seasonal rainfall total of 19 inches being recorded from a rain gauge located on the north-eastern corner of the ranch house. The Reserve received its first precipitation of the season in mid-October 2010, with the season's final rain event occurring March 7, 2011. A particularly strong overnight system flooded the foyer of the Tipton Meeting House on New Year's Eve of 2010. Weather throughout the year was typical: breezy warm days and cool nights with several week-long heat spells punctuating the summer.

Cattail (*Typhus* spp) coverage of the pond increased significantly in 2010-2011, replacing what was hand removed in 2009 (est. 15%) and then some. By the end of the fiscal year (mid-summer 2011) reeds had entirely circled the pond. About a half-acre total of invasive goat grass (*Aegilops cylindrical*) was discovered and removed by Sedgwick volunteers Larry Ballard and Laura Baldwin in the lower third of Windmill Canyon.

Tipton Meeting House construction continued throughout the summer of 2010. A great deal of progress was made in the interior drywall, painting and wood finishes. The rock fireplace was also completed but in October much of it was torn out and redone. Electrical work (both in the building and at the meter) continues by UCSB and Cook Electric. Electricity has still not established. The building is on track with a Dec. 4th completion date.

Tipton Meeting House received its occupancy certificate on December 23, 2010. A 100 yard stretch of electrical and phone conduit was buried between the chicken coop and the electrical service panel. Phone service to the Director's residence was established. Electrical lines were not relocated to the underground conduit.

With construction of the Tipton Meeting House substantially completed in December 2010, Sedgwick docents helped us move from the Studio office to the new building on January 12th. Phone and internet service was established in Mid-January. Training on the building's systems and controls has yet to take place. The building's dedication ceremony took place on March 14th.

Two flooding events occurred at Sedgwick during winter quarter. The offices in the Tipton Meeting House flooded on March 15th (the day after the Dedication Ceremony) as a result of a broken pipe fitting in the mechanical room. An entire rainwater collection cistern drained into the building and required an emergency clean-up contracted to ServiceMaster. More flooding occurred the following weekend, March 19-20 after heavy rains and high winds blew water under the main doors of the Tipton Building, causing standing water all the way into the kitchen. Considerable trenching at the studio would have averted flooding into the building. A tent cabin was torn apart by high winds that weekend as well.

Several of the final details of the Tipton Meeting House were addressed during this quarter, primarily HVAC mechanical issues (Kazimir Gasljevic, UCSB). Additional duct work had to be done to increase fresh air intake sufficient to cool Clarke Hall on a hot day when fully occupied. Screens were installed on office windows. Weather stripping on the both double doors to the TMH will have to be replaced with metal stripping to keep mice out. They are able to chew their way in where there is plastic weather stripping. It was discovered that the wrong solenoid valve was installed to activate filling of the silver rainwater collection tanks when the water level drops to less than 1/3 of tank capacity. Tank will have to be filled by a hose until corrected. M&M Plumbing is responsible. An electrical meter was installed (Jim Morrison, UCSB) to monitor usage (Ethernet to campus, Jordan Sager to monitor).

The Las Cumbres Observatory Global Telescope group reports that the .8 meter telescope in the Byrne Observatory at Sedgwick was remotely used for observation on 90% of clear usable nights in its first full year of use. Three papers were published using data collected at the BOS in addition to a suite of scientific accomplishments that included Exoplanet transit; observations (Fulton et al. 2011); Supernova photometry (Arcavi et al. 2011, in preparation); Near earth object follow-up; AM CVn observations (Levitan et al. 2011); Binary white dwarfs (Steinfeldt et al. 2011); Eclipsing binary stars; PTF Mdwarf project; BJ Fulton rendering a dozen remarkable astrophotography images for publication and outreach. Site improvements included: Installing 'BOS Box' Instrument package with 2 off axis auto guiders, spectrograph port, eyepiece, fast planet cameras, and a main science camera with 8 position filter wheel and large format camera; Adding a solid state fluid cooling system for cameras; installation of a declination cable wrap system; fabrication and installation of new clear motor and drive covers; addition of a web cam to weather station; installation of a UCSB designed mirror cover; and trouble-shooting to fix bugs to get observatory working in a manual mode by experienced telescope operators. Outreach and class use reported in other sections of this report.

A handful of cattle remained at Sedgwick over summer months, largely due to our inability to identify their owners and find ways to get them off the Reserve. The problematic fence line between Woodstock at Sedgwick (Chachakos Lot) was finally rebuilt (by Woodstock). A small herd of Rod Simmon's (Lonestar Engineering) cows stayed at Sedgwick temporarily in August in exchange for some road work. There were no cattle grazing on the Reserve this winter. John Solem inquired about leasing the lower pasture to grow oat hay but it was not pursued because herbicide application would have been necessary.

The Shepherd Farm harvested successful crops of peaches, apples and grapes over the summer. Tom has been staying current with terms of his lease and we've made a little recharge income by allowing farm stay volunteers to rent dorm space during harvest.

The studio roof replaced by EGS Construction, with insulation added under the shingles. The studio floor replaced by EGS Construction, which could not be done until the large pepper tree outside the western corner was removed in Dec 2010. The middle wall of the two room apartment had to be removed and the southern half of the floor jackhammered out to remove tree roots and to level the floor.

Clean up work was completed around the barn and the corral behind the barn was rebuilt. The chicken coop was torn down; scrap metal hauled off; New Holland Harvester (circa 1950) was moved to the north side of the barn.

Kevin Browne was here twice to help get the LAN and Wi-fi networks established and plan for the upcoming NSF grants for weather station, mesh network and radio link. Desert Research institute came to install a new weather station at the cistern above the TMH. NRS stewards poured the cement pad and laid conduit. Live weather feed went on-line May 18, 2011.

John Iwerks completed a perspective map of the Sedgwick Reserve, which now hangs in the lobby of the Tipton Meeting House and a perspective map of the Sedgwick Field Station, which will be part of the reserve's new brochure, being done by Clear Concepts (Bill Schoenberger).

Sedgwick volunteer (and UCSB Campus Police Captain) Dan Massey worked with campus electrician crew to replace the Windmill Canyon windmill and get it running again. It's taken Dan over a year to find and obtain the parts to rebuild the motor assembly; new fan blades were purchased using a donation from neighbor Rich Doren. Dan also re-plumbed the tank and delivery system so that water can go into a cement holding trough at the windmill. Thanks to a windy May (and lots of hard work by Dan and Jim Morrison, campus electrician), the windmill, tank and trough were back in operation within days of the blade assembly being replaced.

Administration

The Sedgwick Reserve staff grew to 1 full time Director and 11 part time employees working in maintenance, administration, custodial, native plant nursery and outreach programs during fiscal year 2010-2011.

PART 7: NRS CAMPUS COMMITTEE ROSTER

Christopher Still	Committee Chair (ex-officio); Ecology, Evolution and Marine Biology
Patricia Holden	Director (ex-officio); Bren School of Environmental Science and Management
Susan Swarbrick	Associate Director (ex-officio); UCSB Natural Reserve System

Sedgwick Reserve

Carla D'Antonio	Faculty Advisor (ex-officio); Ecology, Evolution and Marine Biology
Lars Bildsten	Representative; KITP (Physics)

Community Representatives

Michael Feeney	Land Trust of Santa Barbara County (William Abbot, Alternate)
Mary Meyer	California Department of Fish and Game
Lotus Vermeer	The Nature Conservancy

Student Representatives

TBD	Undergraduate Representative; Associated Students
Lindsey Albertson	Graduate Representative, Graduate Student Association