

**Goldspotted Oak Borer and Oak Mortality**  
**Quarterly Situation Report**  
**April 1 through June 30, 2013**

**Monitoring and Detection**

**San Diego County Update**

**City of San Diego Department of Parks and Recreation – Betsy Miller**

A single goldspotted Oak Borer exit hole was confirmed in a mature coastal live oak tree residing in central Tecolote Canyon on March 19, 2013. Purple sticky traps were hung on May 23<sup>rd</sup>, 2013, in order to detect the presence of adults in trees within the sited area. A total of six traps were hung, spanning a distance of over half a mile in the canyon. The traps were obtained from Tom Coleman, US Forest and Health Protection. The traps were checked on June 24<sup>th</sup>, 2013 to ensure they are all still in good position/condition. The traps will continue to hang until September 2013 when they will be returned to US Forest Service for identification of captured specimens.



**County of San Diego Parks and Recreation – Roger Covalt**

<u>Location of following</u>	<u>New GSOB trees</u>	<u># of Trees dropped due to GSOB</u>	<b>Dos Picos Park Report</b>
Campground	0	6	Five new cases of GSOB found along service road at Old Youth Area. Just discovered, these five trees will need to be cut down and chipped. Otherwise, canopy in all areas still looks generally healthy. We will continue to monitor trees with routine inspections and with help from GIS aerial photographs.
Day Use, Area 1	0	0	
Day Use, Area 2	0	1	
Day Use, Area 3	0	1	
Along Service Road	5	0	

<b>William Heise County Park</b>			
<u>Location of following</u>	<u>New GSOB trees</u>	<u># of Trees dropped due to GSOB</u>	<u>Other GSOB concerns</u>
Picnic Area # 1			Continued crown thinning, Coast live and Black oak mortality
Entrance Drainage			Majority of trees have been removed
RV loop			Continued crown thinning, Coast live and Black oak mortality
Cabin Loop			Coast live oaks showing thinning and stress on perimeter of area.
Volunteer loop			Canyon oaks showing signs of infestation, continued thinning throughout.
Middle Loop			Continued oak mortality, mainly Coast Live.
YC1/Pond			Canyon oaks still showing signs of infestation
Upper loop			Large amount of trees on verge on dying
Julian Estates			
Ranger residence # 1			
Ranger residence # 2		10	Dead trees removed show layers of mortality moving outward from initial area.
<p>April-June appeared that we were caught up on dead tree removals but increased thinning throughout campground looks like we will have a number of removals needed in the near future. One significant Coast live oak in the main meadow appears to be dead. This tree is a huge loss.</p>			



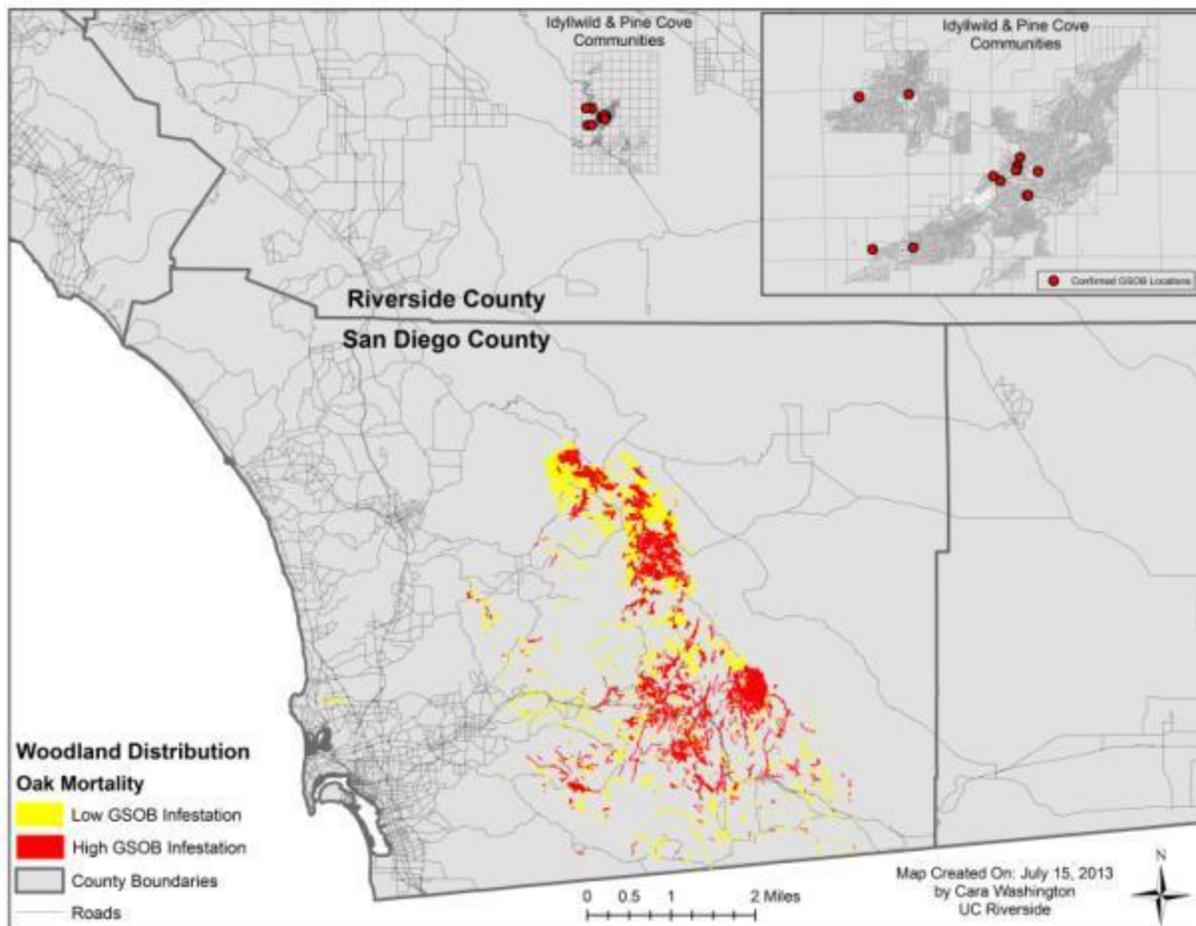
Left: Heise County Park has established a wood sort yard in which to hold wood from infested trees they have to cut down. The wood is segregated by the date cut in order to ensure the wood cures for two years prior to being allowed to move outside of the park. Contact Supervising Park Ranger David Moniz if you have questions about this program.

## Mapping in San Diego County – Cara Washington UCR Graduate Student

A total of 80 study sites covering approximately 1778 HA have been updated with 2012 aerial imagery data (previous data was 2010). An additional 29 sites still need to be evaluated with the newer data.

The updated sites show significant change since 2010:

- 2010 – there were 7,239 total trees affected
- 2012 – 13,280 trees affected
  - 6,041 new trees affected
  - 3,994 of these new trees are in declining state
  - 2251 of these new trees are identified as dead
- Loss of canopy area in the 80 updated plots = 19.7 HA



**Current Infestation Map resulting from work done April through June**

**Follow-up on reports of GSOB through gsob.org website:** We received several reports of possible GSOB in San Diego County through the gsob.org website which we followed up through a combination of methods. Some trees were diagnosed using pictures and information supplied by the reporting party while others required a site visit. In addition to help in conducting follow-up from our partners with San Diego County Ag, CAL FIRE, and the USFS, we now have a well-trained volunteer in the Jacumba area of San Diego County who is assisting with inspections and outreach in that part of the county.

### **San Jacinto Mountains (Riverside County) Update**

**Detection:** To date, a total of 14 California black oaks (*Q. kelloggii*) have been confirmed to have GSOB in the San Jacinto Mountains. Two trees were identified in the community of Pine Cove, about 2 air miles away from the nearest infestation in Idyllwild.

The GSOB “Hotline” for reporting of possible GSOB had 84 calls during the quarter. 82 parcels were inspected by our volunteer survey teams (representatives from both the Idyllwild “Woodies” and Idyllwild Garden Club). They inspected 329 individual trees, consisting of 9 dead/dying trees, 45 in serious decline and 173 healthy trees. One of the trees in Pine Cove identified as having GSOB by the volunteers was indeed heavily infested and was rapidly removed and ground at the Idyllwild grinding facility. A few of the volunteers and agency personnel are becoming savvy in identifying GSOB-infestation.



*Citizen Scientist GSOB Early Warning System volunteers are shown how to identify GSOB attack by Dr. Tom Coleman, USFS FHP, on April 17<sup>th</sup> at William Heise County Park.*

**Dendrochronology - Initial Results of Dendro Work on Idyllwild Black Oaks – Dr. Tom Scott UCCE**

Oak	Earliest Suspected Year of Attack	First Corroborated Year	Year of Outbreak	Years of Attack
Highway 243 (first oak removed)	2010	2010	2011	3
54365 Marion View Drive	2009	2010	2010	4
53065 Marion View Dr (west)	2009	2010	2010	4
Oak at Liquor Store	2012	limited galleries		1
Oak at Idyllwild Garage	2012	limited galleries		1

Earliest year record: There are some limited data to suggest that the oak at the west end of town had a few GSOB galleries in 2009. Both trees have strong evidence of infestation at a number of locations on their trunks in 2010. I only found 3 galleries present in 2010 in cross-sections of the black oak next to Highway 243 (first removed); but a large number of galleries were present in this oak in 2011.

Year of heavy infestation: There is ample evidence to suggest that both of the oaks on Marion View Dr. (54365 and 53065) had a large number of galleries created in 2010, although the oak in the east (54365 Marion View) had more galleries in 2011 (65%) than 2010 (35%). At present we don't know if our cross-sections can be extrapolated as a reasonable sample of all the galleries in these trees.

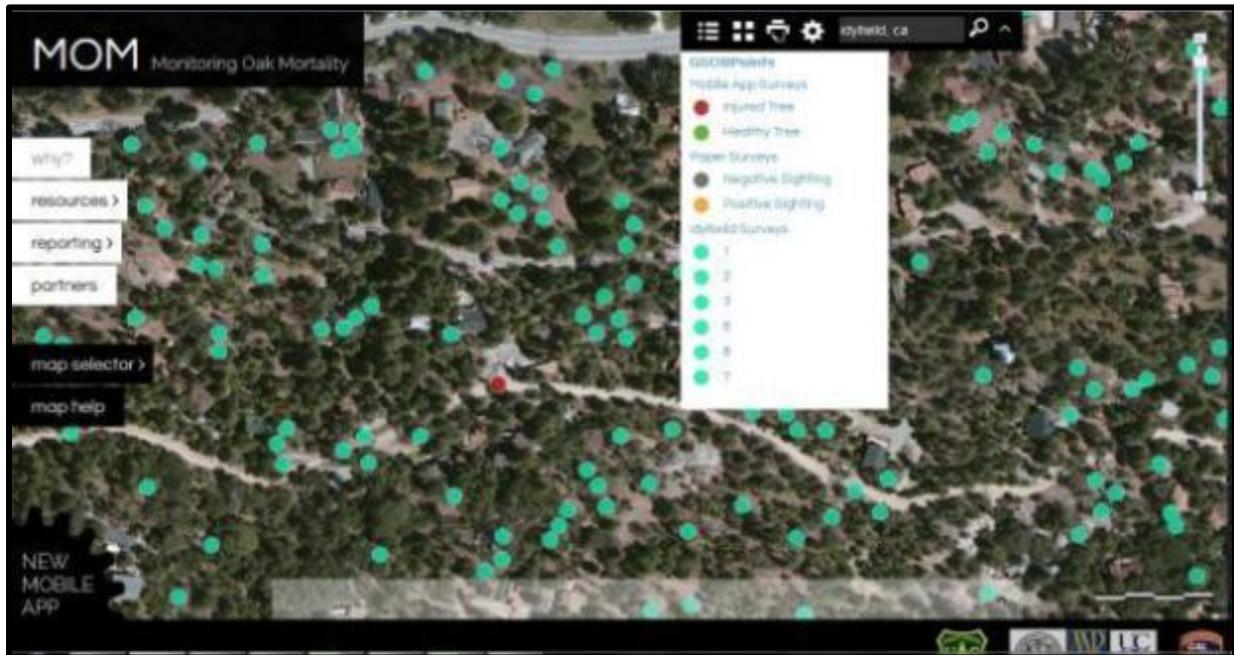
Start of the outbreak: The number of galleries present in 2010 in the Marion View locations has two alternative explanations: (1) sufficient GSOB were introduced during or before the flight season to heavily attack these trees in 2010; or second, that there were lower numbers of beetles present before 2010, but that 2010 was the year when a heavy infestation erupted in these oaks.

Methods and constraints of data: There is a strong correlation between black oak annual-ring width and annual precipitation in Idyllwild ( $r^2$  from 0.6 to 0.9). But all the black oaks we've sampled have large areas sections in decline – with very small annual ring growth after 2003. This makes annual rings more difficult to delineate, and more important, it lowers variation among annual ring widths, which reduces the strength of the correlation with precipitation and temperature.

The most important conclusion to draw from these results are that we have an outbreak that is at least 3 years old, and may have come from multiple points of introduction in Idyllwild.

## GSOB Early Warning System

We have been utilizing the **Mapping Oak Mortality (MOM)** mobile application for data collection and evaluation of its performance. The current App design has many help screens and covers a wide-range of oak pests and is well suited to a novice surveyor surveying just a few trees in their neighborhood, but, it is proving to be too slow to allow efficient collection of large amounts of data. Speed is very important when trying to respond to a new outbreak of GSOB like the one in Idyllwild. Tom Scott, Cara Washington and Kevin Turner are working with the application designer to initiate corrections and improvements to the program.



*This screenshot from the MOM Mobile APP shows a portion of western Idyllwild. The red dot “injured tree” was confirmed to be heavily infested with GSOB and was promptly removed and the bark ground up. The light green dots represent stressed CA black oaks that were identified through using aerial imagery in false infrared. Many of the other trees are conifers.*

**GSOB ID Kits** We are producing and distributing GSOB ID kits to assist EWS volunteers and agencies in determining if a tree has GSOB and for use in education and outreach purposes.

**Generic GSOB PowerPoint** We developed a basic/generic slide show about GSOB which can be utilized by sufficiently-knowledgeable GSOB partners to help with outreach and education.

**San Jacinto Mountains GSOB Survey Volunteers** We determined that the immediate need is to focus on identifying GSOB-infested trees. Data collection on healthy trees or trees with other oak pests will be temporarily suspended. We simplified the manual data collection (paper) form for use by the MOM volunteers in Riverside County for this reason. Cara Washington has created an Access database that is shared between our office, CAL FIRE and the Mountain Communities Fire Safe Council who oversees the volunteers.

# Revised Survey Form

GSOB EWS Survey Form  
Version: June 5, 2013

<b>Tree Location(s)</b>					
County					
Town or community name					
Ownership: <u>Private</u> <u>County</u> <u>State</u> <u>Federal</u>					
Street address (if applicable)					
Latitude (any degree format or UTM for lat/long)					
Longitude					
<b>Add Healthy Tree (# = user generated number)</b>	#	#	#	#	#
Species?					
Diameter at 4.5'? (nearest 6 inches)					
Multiple Stems at 4.5'? (how many?)					
<b>Add Injured Tree (# = user generated number)</b>	#	#	#	#	#
Species?					
Diameter at 4.5'? (nearest 6 inches)					
Multiple Stems at 4.5'? (how many?)					
Crown Rating (1-4) or completely dead (D)					
Leaf Status (* applies to black oak only)					
Most leaves brown, still attached to tree					
*Most leaves green but dwarfed (< 3" long)					
Thin canopy - missing leaves					
Dead/flagging branches (% of canopy)					
*No data (winter deciduous, no leaves)					
Staining/oozing on any bark surface?					
None - low - moderate - high					
GSOB Emergence Holes?					
None - low - moderate - high					
Characteristic Woodpecker Work?					
None - low - moderate - high					
GSOB Larval Galleries Under Bark?					
None - low - moderate - high					
Status of Inspected Tree? (check one)					
Not GSOB attack - no follow up for GSOB					
Can't determine if GSOB - need follow-up					
Probable GSOB attack - need confirmation					
Definitely GSOB - advise landowner					
Unknown					
GSOB (in any lifestage) observed?					
Larvae? (blank for none or L/M/H)					
Pupae? (blank for none or L/M/H)					
Adults? (blank for none or L/M/H)					
Other/contributing causes? (y/n)					
Pathogens? (diseases, rots, parasites, etc.)					
Other insects?					
Fire damage					
Mechanical damage					
Polyphagous Shot Hole Borer possible?					
<b>Submittal (these fields can be reported in a single column at the end of the day or other break point, not necessarily for each tree surveyed)</b>					
Surveyor Name:					
Surveyor Email:					
Date of survey:					
<b>Effort</b>					
Hours (include travel to/from site & survey)					
Mileage (to/from survey)					
Incidental expenses for conducting survey					

(Note: a null or non-entry on most questions can be equivalent to "no", "unknown" or "not applicable")

## **Outreach Efforts**

### **Education/Outreach Committee**

Under the leadership of Anabele Cornejo (Cleveland NF) with contributions by partners from supporting agencies, UC and other groups, the Committee continues to seek new opportunities and fill current needs in education and outreach. Meetings are held every two weeks, mostly as conference calls but with occasional face to face meetings. Contact Anabele if you are interested in participating.

### **Western States Competitive Grant-funded Outreach**

Jan Gonzales (UCCE San Diego) continues to deliver in the area of outreach and education. Some of the things she did for us this quarter:

- Provided GSOB information display and resources at UC ANR State pre-Conference tour in San Diego County, April 8th.
- Presented poster on the GSOB education and outreach program at the UC ANR State Conference, April 9th.
- Gave GSOB presentation at educational workshops for the California Association of Pest Control Applicators, April 9th and 10th.
- Began work on GSOB online self-study modules for targeted audiences.
- Began organizing GSOB field training event for July or August.  
Participated in seven conference call meetings for coordinating GSOB education and outreach.
- Coordinated GSOB display at Regional Area Safety Taskforce (RAST) Annual Fire Summit Conference, May 15th.
- Wrote and submitted proposal to the San Diego Gas & Electric Environmental Champions program, "Bi-lingual Interpretive Goldspotted Oak Borer Education Project."
- Provided GSOB information display and presentation at Campo Community event, June 1st.
- Assisted Bureau of Land Management cooperators with GSOB trap assembly and installation instructions for volunteer event held on June 8th.
- Coordinated with County AWM in preparation for GSOB display at upcoming Insect Fair and the San Diego Botanical Gardens, July 13th -14th.
- Website management: General maintenance and updates - expanded county-specific information pages; added content to 'Diagnosis and Management' page and updated information on Early Warning System page.
- Distributed >1,500 GSOB and California Firewood Taskforce print materials and resources to communities and cooperating partners as requested for public distribution
- Maintained online outreach and communications including Collaborative Tools groups, online reports from public of suspected GSOB symptoms, and Constant Contact listserv.

## Outreach Meetings and Events

6/6/2013	<a href="#">Riverside County Pest Control Operator GSOB Training</a>	<a href="#">Kevin Turner</a>		<a href="#">Add to Discussion</a>
5/30/2013	<a href="#">Target Specialty Products Arbor Symposium</a>	<a href="#">Tracy Ellis</a>		<a href="#">Add to Discussion</a>
5/30/2013	<a href="#">Oak Survey Train the Trainer</a>	<a href="#">Kevin Turner</a>		<a href="#">Add to Discussion</a>
5/22/2013	<a href="#">13th Annual Integrated Pest Management Training</a>	<a href="#">Tracy Ellis</a>		<a href="#">Add to Discussion</a>
5/18/2013	<a href="#">Idyllwild Earth Day</a>	<a href="#">Kevin Turner</a>		<a href="#">Add to Discussion</a>
5/15/2013	<a href="#">2013 Fire Summit</a>	<a href="#">Kevin Turner</a>		<a href="#">Add to Discussion</a>
5/2/2013	<a href="#">Intertribal GSOB Working Group</a>	<a href="#">Kevin Turner</a>		<a href="#">Add to Discussion</a>
4/17/2013	<a href="#">Meeting at Heise with Riverside Counterparts</a>	<a href="#">Kevin Turner</a>	<a href="#">View Plan</a>	<a href="#">Add to Discussion</a>
4/12/2013	<a href="#">San Marcos High School-Job Fair</a>	<a href="#">Tracy Ellis</a>		<a href="#">Add to Discussion</a>
4/11/2013	<a href="#">Oak Park Elementary School</a>	<a href="#">Tracy Ellis</a>		<a href="#">Add to Discussion</a>
4/10/2013	<a href="#">CAPCAED-San Dimas</a>	<a href="#">Jan Gonzales</a>		<a href="#">Add to Discussion</a>
4/9/2013	<a href="#">CAPCAED-Redlands</a>	<a href="#">Jan Gonzales</a>		<a href="#">Add to Discussion</a>
4/9/2013	<a href="#">UC ANR Statewide Conference</a>	<a href="#">Jan Gonzales</a>		<a href="#">Add to Discussion</a>

**County Counterparts Meeting:** On April 17, we organized and emceed a meeting at William Heise County Park in Julian that allowed counterparts from San Diego and Riverside Participants included USFS, CALFIRE, UCCE, California State Parks, county park and road departments, RCDs, fire safe councils and others. The meeting proved to be very valuable and enabled the Riverside folks to examine numerous examples of GSOB attack and hear the impacts GSOB has had in San Diego County. A special thanks to Supervising Ranger David Moniz and Vegetation Manager Roger Covalt of San Diego County Parks who hosted the visit and provided some excellent information, including a site visit to their of a wood-sorting yard where wood is segregated based up the date cut.



*Above: "County Counterparts Meeting" at Heise Park*

**GSOB Intertribal Working Group:** We coordinated with Adrian Ackley, BIA Forester, to organize and present at an inter-tribal working group meeting for Environmental Coordinators from southern California tribes on May 5th. The meeting was held at the San Pasqual Government Center. In addition to Adrian and Kevin, Tom Scott and Tom Coleman also gave presentations and in turn heard from the tribal representatives. . GSOB ID kits and other educational materials were distributed to the participants.

**2013 California Fire Summit** On May 15<sup>th</sup> we staffed a display at the 2013 California Fire Summit in Diamond Bar and answered questions about GSOB from participants. GSOB ID kits and other educational materials were distributed to personnel from selected agencies and groups from all over southern California who were attending the meeting.

**Idyllwild Earth Day** We set up a display with lots of handout materials and gave a short GSOB talk at the May 18<sup>th</sup> Idyllwild Earth Day.



**GSOB Survey “Train the Trainer”** A “Train the Trainer” session was conducted for select members of the Idyllwild Garden Club and “Woodies” volunteers that are conducting surveys of potentially infested oaks in the San Jacinto Mountains. They will in turn train additional volunteers.

**Pest Control Operators Meeting – Riverside County** We worked with the Riverside County Agricultural Commissioner’s office to organize and conduct a June 6<sup>th</sup> meeting for Pest Control Operators who may conduct GSOB-related pesticide treatments in Riverside County. This was done to encourage landowners to use only properly licensed and registered PCOs if they elect to use pesticides to protect their susceptible oak trees. Tom Scott, Tom Coleman, Gregg Bratcher (CAL FIRE) and Kevin Turner (UCR) made short presentations and answered questions along with County Ag staff.

## Demonstration Projects



**Grinding Demonstration in Idyllwild** – We have had excellent emergence from the untreated “controls”, starting in early June (*see photo to the left*). Of significant concern is that one of the GSOB traps had nearly 100 GSOB in the trap, produced from only a half barrel-full of random bark chunks from an infested tree. Preliminary results for the ground material look good but definitive results on the effectiveness of the grinding treatments won’t be available until the end of flight season.

### Pesticide as a Barrier to Adult GSOB Emergence Demonstration (San Diego County)

Preliminary results on this year’s demonstration are very encouraging for the study using infested wood bolts. By the end of this quarter, there had been no emergence of any GSOB adults from any of the treated wood samples while significant emergence was observed from untreated controls. After two years of previous experience, we have become more sophisticated in selecting highly-infested material for the test and have combined that with improved containment barrels/traps.

This quarter an opportunity arose to conduct another “pesticide as a barrier to emergence” demonstration on living/standing GSOB-infested oaks. A large ranch in the Pine Valley area of San Diego County applied carbaryl to some of their high-value oak trees and invited us to conduct a test. Unfortunately, our quickly-engineered design for capturing emerging beetles on standing trees proved inadequate to produce reliable data. We’ll consider another attempt next year if the opportunity arises after rethinking the containment/trapping system.



*Photo above right: the rough irregular bark surface and imperfect cylinder of oak tree boles makes it a big challenge to develop a containment/trapping system. Large, face down, yellow “sticky” cards covered by window screen were used to try and capture emerging GSOB.*

Please contact Kevin Turner at [kevint@ucr.edu](mailto:kevint@ucr.edu) if you see errors or omissions on this report. Thanks to all who contributed.