Connecting Children to the Land:
Place-Based Education in the Muddy Creek Watershed,
Oregon

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1. Introduction

Several authors have stressed the importance of hands-on environmental education for children (Rivas and Owen 1999, Kontos 2001, Pandey 2002, Young 2002), focusing on the inherent love of nature in the child and on the child’s ability to learn and change in response to an experiential approach to education. Geographers, in particular, have called for greater attention to children’s sense of place, and the role that place-based education can play in their development (Lane et al. 2005, Jessop et al. 2008). Others have described the importance of providing opportunities for children to connect across generations to pass on local knowledge and develop an appreciation for the past (Blizard and Schuster 2007). Yet these opportunities are hard to come by in most public school systems. School districts often operate under economic pressures that lead to consolidation; increased class sizes in the schools that remain; limited extracurricular activities, outdoor activities, and field excursions; and closure of rural schools, where outdoor and environmental education might be incorporated most easily. Children today often have limited first-hand knowledge of the outdoor environment in their local watershed (Louv 2005), the farm and forest enterprises – or “working landscapes” – that produce the food they eat or the products they use, and the life experiences of the previous generation in the place in which they live.

This paper describes a project that worked within the confines of a public school curriculum to engage students in activities that helped them connect to and learn about their watershed. The project addresses the need for hands-on, place-based outdoor education; and brought landowners, teachers, students, parents and scientists together through educational activities in a rural watershed. Project participants from diverse backgrounds shared a common interest in educating children about their local heritage and the decision-making processes
involved in management of forest and farm land. A place-based approach to outdoor and environmental education was employed to help inform children about the geography of their local watershed, engage them in activities designed to develop observation and listening skills, and integrate ideas with actions.

Specifically, the project involved site visits to local farms and forests to observe and learn from landowners and managers in the field, field journals to both enhance listening and observational skills and to foster creativity through art and writing, theme-based interviews with landowners in the classroom, and hands-on activities, including restoration projects on landowners’ properties that helped the students translate what they had learned into actions on the ground. In this paper we describe these project elements in sufficient detail to enable replication in other contexts, then report on learning outcomes and provide suggestions for improving the curriculum in the future.

2. Muddy Creek Watershed

The geographic focus of the project was the Muddy Creek Watershed which sits just east of the Coast Range in the Willamette Valley near Corvallis, Oregon. The participant properties are shown in Figure 1, characterized according to whether these properties are primarily forest, farm, or wildlife refuge. According to Hulse et al. (2000), 42 percent of the watershed is zoned as exclusive farm use, another 48 percent is in primary and secondary forest, 7 percent of the watershed lies in the Finley Wildlife Refuge, while the remaining 3 percent of the watershed is in rural residential and developed areas. Public lands in the watershed include extensive areas of state forest as well as the National Wildlife Refuge. Residential areas of two small communities
(Alpine and Bellfountain) comprise the developed portion of the watershed, with a cluster of rural residential parcels just south of the Philomath city limits.

[Insert Figure 1 near here]

Like many rural landscapes throughout the U.S., the area encompassing the Muddy Creek Watershed has undergone tremendous socioeconomic and ecological change over the last half century due in large part to the globalization of agriculture, restructuring of forest and agricultural industries, technology, and regional demographic change. Declining profits related to food and fiber production on small and medium sized farms, along with greater societal interest in conservation and recreation, have resulted in many landowners managing more explicitly for wildlife habitat and native ecosystems (some more willingly than others). For a number of social and economic reasons, fewer children are opting to take over family operations, leading to conversion of farm and forest land to residential uses in some cases, and an aging population with a corresponding reduction in young people. In keeping with trends in rural areas throughout the country, the main K-8 rural school in the watershed, Inavale School, was closed by the Corvallis School District due to low enrollment and budget constraints in the first few months of the project, which required students living in the watershed and the lead teacher with whom we developed the project to move to another school, which became our new partner school.

Today, the Muddy Creek Watershed is dominated by agricultural enterprises characteristic of the region: grass seed farms; Christmas tree plantations; vineyards, orchards, and vegetable farms; as well as crops such as corn, wheat, and oats. It is also home to a number
of rare and endangered species that occur in local prairies and on private agricultural lands, resulting in considerable interest within the conservation community in engaging private landowners in activities that preserve and protect these values. The watershed has also been the subject of research on the potential effects of landscape change and restoration actions in the surrounding Willamette Valley (Hulse et al. 2000, Adamus et al. 2001, Lamy et al. 2002, Hulse et al. 2003, Berger et al. 2003).

3. Project Activities and Methods

Our project involved middle school students and teachers from a public school in Corvallis, Muddy Creek landowners, and Oregon State University (OSU) researchers. It included several elements: mapping landowners’ properties, site visits to local farm and forest properties, theme-based landowner interviews in the classroom, hands-on restoration projects to grow and plant native plant species on properties of willing landowners, and presentation of student work to the community.

3.1. Student Participants

The class participating in this project initially consisted of 30 middle school students in grades 6-8. About half of these students had attended the aforementioned rural school in the watershed before it closed, and the other students came from the city neighborhood surrounding the school. The class included a number of students in the English as a second language program.

1 The rare, threatened and endangered species include two butterflies - Fender’s blue and Taylor’s checkerspot; one bird – Streaked Horned Lark; and four plants - Kincaid’s lupine, Nelson’s checkermallow, Willamette daisy, and Bradshaw’s lomatium.

2 The project was originally designed to be carried out at the rural Inavale School mentioned above, but the school was closed in the beginning stages of the project. As a result, the project was transferred to the next closest public school within the city limits, Lincoln School, where many of the rural students were transferred.
Two teachers were assigned to team-teach the class. Connecting classrooms allowed splitting project participants into two groups for flexibility in instruction and management of multiple activities. Ten additional students joined the class over the course of the year. According to conversations with some of these parents during field trips, the place-based curriculum was a factor that influenced their choice, along with the opportunity for a K-8 learning environment.

The initial set of interview questions were developed by the research team and revised by the classroom teachers and students to make them easier for the students to ask. The classroom teachers were directly responsible for day to day instruction on the project, landowner contacts, content and assignments and evaluation of the student work, assisted by the research team members, who attended most of the site visits and all interview sessions.

3.2. Selection of Landowner Participants

Landowner and land manager participants were purposively selected by the lead teacher on the project based on a tradition of past involvement with the rural, public K-8 school in the watershed (Inavale). We strove to include individuals whose property and enterprises were representative of the agriculture and forest production in the watershed, as well as landowners who were proactive and innovative in the incorporation of conservation and stewardship practices. Participants thus included a private forest landowner; two private forest company employees involved in management and educational outreach; five agricultural landowners from mid-size operations producing grass seed, Christmas trees, vegetable and grain crops; and a U.S. Fish and Wildlife Service (USFWS) employee from the nearby Finley National Wildlife Refuge.

3.3. Use of Maps and Aerial Photos
Digital orthophotos of all properties owned or managed by the interviewees were prepared ahead of time for markup and annotation by students and landowners during the interviews. Another photographic quality print was prepared as a gift to the landowners for volunteering their time to assist on the project. A wall-sized map of the entire watershed was also prepared for the class, and was displayed in the classroom and at the 4-H Wildlife Stewards Youth Summit, an annual conference sponsored by a number of public and private local, state, and federal entities, at the culmination of the project.

3.4. Site Visits and Interviews

Wednesdays were dedicated to the environmental curriculum and the Muddy Creek Project throughout the school year. On other days of the week students participated in regular classroom activities and lessons in other subjects. Site visits and field trips took place on Wednesdays in the fall, landowner interviews were conducted in the classroom during the winter, and planting activities on landowners’ properties were conducted in the spring. Students also met with three landowners during follow-up site visits as mentors to classes of younger students, or to record data on their native plantings.

3.4.1. Site Visits

During the site visits, landowners led the students to various locations on their properties and talked about their enterprise, how they made decisions regarding which farm and forest products to produce and how to manage the land, and the history of their families in the watershed. The visit to the National Wildlife Refuge provided students an opportunity to learn about the differences between managing a public property, which has as its mission the provision
of habitat for wildlife, and private land which is managed primarily for economic profitability, but also for conservation values. Landowner-led tours were followed by lunch in the field, then students were given time to observe and write or draw in their field journals. The class returned to the school in the early afternoon.

3.4.2. Landowner Interviews

The middle-school students interviewed producers to gain an understanding of their history with the land, current practices, and visions of the future. The interview questions (Appendix 1) were divided into five segments, each relating to a topic: History and Community; Agricultural and Forestry Practices; Stewardship Practices; Constraints and Difficulties; and Decision Making. Students were organized into five groups of four to six students, and each group focused on one of these five topics throughout all the interviews. The students thus became “experts” in one of the topics by the end of the project, and each group was required to synthesize and share their findings with the rest of the class. This approach enabled students to identify and try to explain patterns, as different landowners responded to the same questions, sometimes in similar ways but often quite differently.

Students prepared for the interviews by role-playing, conducting mock interviews with students from the class as subjects. Students then collectively conducted an initial interview with the outreach and education specialist from a local forest who has had substantial experience in working with primary and secondary school groups, and who had conducted one of the first site visits to that forest property. Their familiarity with the first adult interviewee helped the class become more at ease with the interview process. Several students were relatively uncomfortable with the interview process at the start. This interview provided an important “rehearsal”
opportunity for the students as well as feedback used to modify the process to make it run more
smoothly. Subsequent interviews were then conducted by the groups of students assigned to each
interview topic, with one group member designated as the leader. Each group was supervised by
an adult – either a teacher, student teacher, or project investigator during the interviews.

Landowners or managers sat at a table (Figure 2) with the interview group for a given
topic. Landowners were asked to delineate the current extent of conservation practices, as well as
areas dedicated to agricultural production or forestry, by drawing on copies of the aerial
photographs provided. The landowners were adept in linking locations on the photographs with
their actions on the ground. The site visits prior to the interviews (coupled with the air photos)
enabled students to better orient themselves and understand what the landowners were
describing. In addition, the ability of the students to point to specific locations on the aerial
photographs and ask questions, such as “What is this here?” or “Why do you do this there?”
made the interviews concrete and informative.

[Insert Figure 2 near here]

The student groups interviewed each participating landowner or land manager drawing
on the prepared questions concerning their topic, taking notes individually. Once the group
completed its set of interview questions, the students moved directly to the class computers to
summarize the results of the interview. Refreshment breaks between interviews allowed students
to interact informally with landowners as well. The landowner interviews were the topic of one
of the poster presentations, and provided information used in many of the pages in a book
produced by the class, described below.
To assist us in characterizing and describing themes that emerged through landowner-student interactions during interviews, the interviews were recorded and transcribed. We then read the transcripts of interviews, identified emergent themes, assigned the data to the various themes, and pulled exemplar quotes to include here as illustrative of the themes we identified.

3.5. Restoration Projects

Students participated in several projects involving hands-on restoration and monitoring of restoration activities. With the assistance of a local non-profit organization, the Institute for Applied Ecology (IAE), the class participated in two restoration projects, one at the Finley National Wildlife Refuge, the other on a Century Farm in the Muddy Creek watershed. For the first project, students successfully grew 300 individuals of the rare and endangered Nelson’s checkermallow (*Sidalcea nelsoniana*), a native wildflower that serves as an important host plant for the Fenders blue butterfly, from seed in a small greenhouse at Lincoln School, then planted them in a wet prairie site at Finley National Wildlife Refuge with no mortality (Figure 3). They also assisted IAE staff in counting leaves and flowering in these plants.

[Insert Figure 3 near here]

The second restoration project was the design and planting of a riparian buffer consisting of 40 native shrubs and trees along Beaver Creek (a tributary of Muddy Creek) on the property of one of the landowners who participated in our class interviews. Students also helped plant (and monitor the success of plantings) more checkermallow on another landowner’s property, and assisted with an experiment concerning the establishment of checkermallow plantings at the Finley National Wildlife Refuge.
3.6. Student Publications and Presentations

The students incorporated findings from the interviews and site visits into individual books written and illustrated by each of them on their own. Then, with the teacher’s help, they collaboratively developed a children’s coloring book that they entitled *Stories of Sustainability* about the Muddy Creek Watershed. The book featured simple maps and images of agricultural landscapes, with text insets written by the students indicating specific land use practices for environmental improvements and the distribution and types of wildlife habitat occurring on the agricultural lands. Each student in the class received a copy of *Stories of Sustainability*. Students also worked in groups to prepare and present posters that showcased aspects of the project at the OSU Extension-sponsored Wildlife Stewards Summit held at their school and at OSU “Ag Day”.

4. Results

Here we report the teaching and learning outcomes related to the various elements of the project, drawing on interview transcripts and written documents produced by the children, as well as formal evaluations administered to all participants (students, landowners, and researchers) at the end of the project. In a subsequent section, we offer thoughts on the strengths and weaknesses of each element, and suggestions for improvement.

4.1. Site Visits and Interviews

The responses of interview participants to the five topics covered in the interviews (History and Community, Agriculture and Forest Practices, Stewardship Practices, Difficulties and Constraints, and Decision-making) were each summarized into a book page about that topic by the students in the group assigned to it. In addition, students collaborated on pages about the
properties and landowners of each of the places they visited and conducted associated interviews with participants. Many of these pages tended to focus on the History and Community topic, with varying levels of effort dedicated to the other topics. When asked where on their land they employed stewardship practices, interview participants often said, “On all of it!” They did not tend to partition their actions into “stewardship actions” and “production actions”, or areas on their land into conservation areas and production areas. Most participants talked at the same time about land management practices used to protect soil, water and habitat as well as for farm and forest product production. The students also tended to discuss these topics together in their book pages on the properties of the specific landowner interviewees. Topics relating to constraints and difficulties and decision-making tended to receive less attention in the landowner-specific pages, except in the case of one farmer who had given detailed responses to these questions and had emphasized the economic constraints faced by farmers.

Landowner interviews and the field trips and site visits provided students and researchers with opportunities to gain insights into the realities of farm and forest ownership, management, and rural life in general, in the context of rapid change due to globalization and recent transitions in land use and local demographics. The site visits brought the local geography alive for the children, and gave them memorable experiences, stories and narratives to illustrate the scientific concepts that they were being taught in the classroom, while the interviews, utilizing maps, helped them make sense of what they had seen in the field.

We transcribed, coded, and analyzed recordings of landowner-student interactions during the site visits and interviews to assess learning outcomes and the value of an experiential, place-based approach to collaborative learning about the rural working landscapes in their watershed.
A number of recurring themes emerged from the interviews which we loosely group here into three sections.

First, students appeared to gain a better understanding of the ways in which physical geography influences spatial relations, patterns and variation within the watershed, and shapes and constrains the range of management choices open to landowners. Second, students were made aware of the human dimensions of agricultural land management, in that they were exposed to a variety of landowner philosophies and attitudes about the current state of agriculture in the region, economic and political constraints and opportunities impinging on the viability of their operations, and strategies for adapting to changing social, economic, and political conditions. The landowners they interacted with demonstrated different outlooks and different abilities to cope with and/or adapt to change. Third, landowner-student conversations illustrated the value of intergenerational interaction for expanding students’ sense of place and their understanding of how rural communities have changed socially and culturally over the last century, and how certain rural community traditions, such as those having to do with neighboring, have been maintained. These themes were reflected in student summaries of the interviews, as well as in some of the students’ written contributions to the coloring book or poster presentations.

In the following sections, we expand on these themes, providing exemplar quotes to illustrate our observations, with landowners’ words indicated by the use of italics.

4.1.1. Physical Geography and Agricultural Land Management

One of the most successful aspects of the project was the use of maps during the landowner interviews to orient the students, and give them a sense of the larger scale, spaces and
distances between places characteristic of rural, agricultural landscapes, compared to more urban environments. Students were visibly impressed with the amount and extent of farm and forest land owned by the participants.

- Is this your land too?
- Yes it is. And this year we cut one little piece right up here…
- [interrupting] How much land do you own?
- Uh, 250 acres.
- So you own some over here?
- I own this up through like that and I own this strip and I own this piece and I have another strip over here.
- That’s a lot!

Students were also able to get a good sense of land use/land cover change over time, since the maps were created four years prior with 2002 data.

- When we were [on my land], we were right there. And as you can see, we clear cut a little patch of timber right there. And another piece down here. We planted this back. These trees are up 15 feet tall in here right now.
- This is 2002?
- Yeah, this was 4 yrs ago when this was taken. And then this piece you can see was all logged in 2002. And then it was planted back, and these trees are all 10 feet tall in this part here. So we rotate around. I cut this and then I went over here and cut a piece over here. This piece belongs to a big timber company, Weyerhauser. Since this picture was taken, this has all been logged over here.
- Oh my gosh!

A recurring theme throughout the site visits and interviews had to do with the ways in which physical geography dictates land use.

- Probably the #1 thing you have to understand about farming is that your resource is the land – what it’s good for, what it can do for you. Ours is good for raising livestock, or grass seed... not good for vegetables because the land is not correct. Our land is flat and very wet so mostly good for raising grass seed, so that’s what we do. I understand the land and what it’ll do and what it’ll give and how to improve it.

The forest manager also referred to the role of soil type in determining the tree species grown.

- What keeps you from doing what you want to do on your land?
- Physical constraints – soils ... keep you from growing some things.
He also described a fundamental difference between farming and raising trees for crops due to the essential physical nature of the resource.

- What influences decision-making on your forest?
  - [There’s a] temporal aspect to decision-making. Different from farming... Many of the things a farmer does will happen between now and October. They plant, fertilize ... by October they have it harvested and replanted, ready for the next year. We have to think 60 yrs ahead. One of the big differences between forestry and farming ... is time.

A recurring theme in the interviews with farmers, in particular, was the unique set of challenges posed to their operations by the presence of Muddy Creek and its associated wetlands and riparian areas.

- Farmer 1: These areas that are really wet, I never plow the soils or stir the soils up so that it erodes and washes downstream and pollutes the rivers. I always no-till those - plant it without ever destroying the soils. And any of the wetland ... We don’t do anything to it.
- Farmer 2: Because this ground is so flat, the only fields you can farm are the high ones, the ones that stay up above water so that something will grow in the wintertime when the ground is wet so it doesn’t drowned out. That’s why the fields are shaped so funny, because the creek runs right alongside darn near all of them. So in between the fields, is all wetlands, It all floods.

Farmers compared their operations to those outside the watershed, referring to the map, emphasizing the additional constraints imposed upon them by the Muddy Creek environment, where grass seed fields had to be positioned between and among wetlands.

- The interesting thing about it is, if you see all these fields that are out this way, these are all grass seed fields. Well, we have grass seed fields, too, but ours are a lot smaller. These here are grass seed fields, little dinky things... as opposed to all these 300-400 acre fields...

**4.1.2. Human Dimensions of Agricultural Land Management**

After multiple interactions with different landowners, asking the same questions, students began to see how physical geography was just one factor contributing to landscape outcomes. In this way they were exposed to the human dimensions of agricultural land management, including
individual perceptions, attitudes, and management philosophies; legal and political constraints including those related to government programs; and economic constraints related to globalization.

They started noticing that, while there were similarities in terms of the constraints landowners had to deal with, such as soil type, wetlands, and industry trends, different landowners had different perceptions about their situation and thus did things differently. It was interesting for the students to see emerging patterns.

- You kids enjoy doing this?
- Student 1: Yeah, yeah, it’s fun!
- Student 2: It’s interesting… it’s kind of funny, cuz like we’ve been asking the same questions, and we get kind of related answers and different answers.
- Student 3: Yeah!
- Student 2: Yeah, some of the places we get the same answers like you would say, and other places it’s like the total opposite.

Some of the most memorable experiences during the site visits and interviews were the stories told by the landowners or managers as they led the tours of their land. The stories they chose to tell, the insights they shared, and their overall demeanor and outlook on life illustrated wide variation in landowner response and adaptation to constraints associated with physical geography, as well as economic and political realities experienced by all. Students came to appreciate the role of landowner agency, along with physical, economic, and political geography, in determining landscape outcomes. Project methods facilitated this learning, as the ability to ask about specific places during a site visit, or to point to particular places on the map in follow-up questions during interviews, provided a richer understanding of the principles that landowners used in different instances to make small but important decisions than would have been provided by answers to the more general questions in the interview scripts. For example, during one site visit to a local forest, the manager showed the students two clear cuts side by side, each managed
by a different entity. When asked about the differences between them, he compared different
approaches to complying with state forest practice regulations requiring the retention of a certain
percentage of trees. In the one managed by his neighbor, the trees retained were along the
boundary of the clear cut, essentially just making the clear cut a bit smaller; while in the one he
managed, patches of trees within the clear cut were left unharvested to provide shade and cover
for wildlife. He also pointed out that, within his harvest unit, they did not use herbicides around
their newly planted tree seedlings, and explained the reasoning behind that decision, along with
the implications for both wildlife management and eventual tree yield.

- When a deer walks across a newly-planted clear cut, that deer is going to take
  a bite with every step. Over there [pointing to his newly-replanted clear cut],
  he’s got a lot to eat besides my trees. In that clear cut over there [pointing to
  the neighboring clear cut, where herbicide had been used to control weeds],
  when a deer walks across that clear cut, there’s nothing to eat but those little
trees.

Among the farmers, most described the wetlands and riparian areas in terms of the
limitations they placed on their operations due to growing legal constraints associated with the
Clean Water Act, for example, and societal expectations.

- What influences your decision-making?
- Landowner 1: There are a number of things. The laws govern a lot of what we do. Some
  social things. Neighbors might get upset if we harvest some of our trees. Some groups
don’t like us and try to make laws to stop us. If there’s a riparian area, we can’t harvest
the riparian area because we need to leave protection for the stream.
- Landowner 2: In the 1970s the government decided they’d designate these areas as
  wetlands... you are not allowed to destroy these wetlands. It’s against the law. Our big
trouble is we’ve got a lot of land that’s not producing any income and we have to pay the
property taxes to the county whether it produces any income or not...

One farmer, however, put a more positive spin on the presence of Muddy Creek on his
property, referring to it as “the neat thing about our farm,” and didn’t seem to be bothered by the
regulations guiding wetland management. This landowner had found a way to capitalize on what
others saw as a liability, by establishing a waterfowl hunting operation that depended on the presence of high-quality wetlands.

- Because we have the creek, we have a lot of nice habitat for wildlife. We have 3 miles of riparian on our farm. We have a whole wetland project down here we put in. There’s about 40 acres in that one. We have commercial duck pond is this piece here. And we have another one here, and another one there. So we plant for wildlife, and we raise wildlife, there are about 2,000 ducks about 250 yards from my house floating around on my duck ponds. We develop wetlands.

Landowners also responded differently to the question, “What are your goals for the land?” For example, while all of the farmers wanted to maintain the viability of their grass seed operations, they had different secondary goals and different approaches to supplementing their income with economic diversification strategies. In contrast to the above-mentioned farmer who was cultivating waterfowl habitat, for example, another farmer had invested in an “agritainment” enterprise by developing a corn maze every fall, and was contemplating subdividing some of his land for residential development.

- We’re going to try to sell... make 8 lots out of this part right here. Sell it for houses. If we can. This ground is not productive farm ground. It’s real hilly. Very poor soils. An old red soil. Won’t even raise a good tree. Not productive soils, so it’s pretty unproductive for anything but housing sites.

Similarly, these two farmers provided very different answers to the question, “What would you do to your land if you had more money?”

- Farmer 1: Develop more wetlands.
- Farmer 2: Put more lime on my fields. You need lots of lime. It’s an ongoing battle in this valley. [The soil] can’t be too acid. All the wetness.

These responses effectively illustrated contrasting views about the best way to ensure the viability of a farming operation in the face of the similar constraints they were facing, with one looking to capitalize on emerging opportunities related to public demand for natural amenities
and recreation, and the other taking a more traditional, productivist stance, seeking to enhance crop growth.

When landowners were asked about where the products produced on their land were sold, they gave very specific descriptions of national and international markets for their products and how drought in Australia or changes in agricultural practices in the U.S. Corn Belt might impact their ability to sell products such as grass seed from the Willamette Valley. This was an excellent opportunity for the students to learn first hand about the global nature of agricultural commodity markets. The students were intrigued to hear that products they saw being grown nearby would probably be sold in Japan, Argentina, Chile, New Zealand, and other areas around the world.

The questions about constraints shaping landowner management decisions resulted in several mini-lessons about the implications of globalization for the grass seed industry and agriculture in the Willamette Valley more generally. One farmer described how economics had necessitated a recent switch in his operation from dairy to grass seed.

- From the 1940s until 2000 our land was in dairy, now it’s in grass seed.
- So why did you decide to stop doing dairy?
- Because we were losing $5000/month for 5 years and if you do the math…
- That’s quite a bit of money!
- That’s quite a bit of money. So we decided we better get rid of the cows before we end up mortgaging the farm, which had no mortgages against it.

While grass seed is now the dominant crop being grown in the watershed, and farmers have been competing in a global market for a number of years, there were concerns among the farmers about the future of the industry, given growing competition from grass seed growers in other parts of the world. One farmer told the students about the recent demise of the peppermint industry in the Willamette Valley, and wondered if grass seed might be next.

- … the peppermint guys, they can’t compete because China’s raising peppermint and it’s so much cheaper to produce over there that they have no market here. And they used to raise a lot of peppermint in this valley. I have neighbors that raised peppermint and they
just had to go out of business. And I’m afraid that someday that’s going to happen with the grass seed business... They’re gonna teach China how to raise it or somebody else and they can do it cheaper and then our industry’s gonna be dead in the water. Everything’s international anymore, it’s a different world than it was 40 years ago.

The students were also exposed to strong opinions about the role that the federal government, and agricultural politics, might be playing in the current economic situation confronting farmers in the Willamette Valley.

- [The grass seed growers] have no clout back in Washington. So they [the government] could probably care less if all the grass seed comes out of Argentina. Because you’re only affecting just a few farmers here – 600 farmers. So they probably don’t care about 600 farmers in the Willamette Valley. That’s the reality of the whole situation. That’s why I haven’t encouraged my kids to get into farming. Cuz the reality is we can’t compete on a global thing .. when you start adding our wages and our cost of living .. our standard of living is so high and it wants to be maintained that high and we can’t compete.

- Do you see less [government support] now?
- Oh I see way less. I mean.. agriculture is .. ah.. is not important. In the State of the Union address the President used to always speak a little bit about farming.. Did you hear anything about farming the last 2 or 3 years? Never. It’s just not important. It’s not important. As long as we can keep trucking the food in, and its cheap food, it keeps people happy. Food prices go up then people won’t be happy. It’s just not a high priority. It’s just reality. I’m learning to face it.
- That was a good economic lesson…

4.1.3. Rural Communities: Continuity and Change Over Time

While many landowners referred to the rapid changes affecting the Muddy Creek landscape and communities, most of them troubling, another recurring theme that successfully engaged the students had to do with the continuity that characterized certain aspects of rural life there. Students were impressed with the longevity and rootedness demonstrated by the multigenerational operations, comparing and contrasting the landowners’ experiences with their own. Many of the participating landowners were in their 50s and 60s, in keeping with national trends in farmer demographics. This facilitated a valuable intergenerational experience.

- This whole area was in my family. I’m 67 years old. Been here all my life. Grew up in that house. Parents built it in 1934. Dad was born ½ mile down the road in 1902. Died at
age 87. My grandfather was here since 1880s. My family has been here 120 years. It's unusual. Not very many people who live that close to where they grew up. Another boy that grew up right over here, he still lives in the community and he and I went to 1st grade together.

- Wow... wow... wow... [several students]
- Student 1: I've only stayed in one place for three years and left.
- Yeah it's unusual that I live where I grew up... Not that many people...
- Student 2: I've known a house for 13 years...

This farmer's stories about his parents and their parents working the land the students had visited got them ruminating about how their own life experiences compare to these other foreign ones, not only via interactions with the landowner, but with each other, comparing notes on their own family histories.

Students were also struck by the way rural landowners conceived of neighbors and neighboring, especially the spatial element. Hearing about the landowners' experiences stimulated self-reflection in the students that helped them put their own lives in context.

- How far is your nearest neighbor?
- From my house to this house is like a quarter of a mile.
- Student 1: [laughing] My neighbor is two feet! [side conversation among students starts]
- Student 2: My neighbor is like one foot!
- Student 3: I'm surrounded! I have an apartment around me. My house is right here, and then there's a fence like that and then all the way around here it's apartments!
- [laughter]

Another farmer also referred to the large spaces between neighbors in his watershed, characterizing them as what he loved most about rural life, especially the associated experience of being surrounded by nature.

- My nearest neighbor is maybe a quarter mile, but no one has lived there for a couple years, my next neighbor is about a mile, but that's the beauty of, if you enjoy that sort of isolationism, as in if you like to be down your own half mile drive way and see anyone coming down the road and get to see the sun rise and sun set and all the animals. My community's probably tighter with the animals than it is with the humans...
This farmer’s definition of a neighbor was also foreign to many of the children, and was illustrative of the difference between what sociologists refer to as “communities of interest,” as opposed to the more common perception of neighbors as part of “communities of place.”

- And do you feel like you know most of the people who are your neighbors?
- *Oh sure, sure, I can even remember them on account that there aren’t that many. It’s like, what’s a neighbor?? Mr. XX lives about 4-5 miles from me but we’re still neighbors. Neighbors live another 8 or 9 miles away down toward the Willamette River, but they’re all neighbors when you live in the country and you’re involved in agriculture, your neighbors are probably about anyone in Southern Benton County.*

Such insights from the landowners facilitated the beginnings of an understanding of the geographic theme of socio-spatial relations, or, more simply, the ways in which space and spatial relations shape social interactions in unique ways depending on geographic context (Jessop et al. 2008).

The question about neighbor interactions – part of the interview guide – elicited several interesting responses from the landowners. Students heard stories about neighboring again and again that they could compare with their own experiences.

- Where do you interact with your neighbors?
- *We visit on the road a lot. We wave and we stop and we talk. And we find out who has the saddest story about how things are going.*
- [laughter among kids]

The close-knit nature of the community, and the longstanding traditions of commiserating, empathizing, and helping each other out during hard times were referenced by several of the landowners.

- What would you like to tell us about your community that we haven’t asked?
- *The best part about the community is that there really isn’t such a thing until you’re in need. You know, you don’t see everyone every day, you don’t all go to the office at the same time. Till you’re in need, like you’re in a windstorm or a power outage or something like that, and then everybody helps everybody.*
- So you do a lot of helping your neighbors…
Along with stories about longstanding social and cultural traditions in the watershed were stories about change, and concerns about the future of agriculture and rural life as they knew it. Demographic change, specifically declining population, and declining numbers of young people, along with an increase in the average age of landowners, was one recurring theme. A multigeneration forest owner explained this to the students.

- **Now this ground right here you see, there’s a lot of houses.. In the 1960s my dad subdivided... lots of school kids.. all went to Inavale.. I went to Inavale first year it was built..15 different school kids would catch the bus here and go to Inavale and some to high school... And that was 40 years ago. But today, there’s only about 4 kids that live in this community. So we don’t have many kids for the school. In our community, I’m here, my cousin lives here. We’re the only two that have been there for a long long time.**

One of the farmers related a similar story, and expressed his concerns about the present state of affairs.

- **What would you like to tell us about your community that we haven’t asked?**

  **Hmm. It’s pretty sparse. Obviously, some of you aren’t at Inavale School anymore because the population is so sparse there aren’t enough children to make Inavale a viable school, so you all got to come into town, which is sad and a shame.**

Consistent with national trends, few if any of the participating landowners’ children were considering taking over their parents’ operations.

- **And my... I have 2 boys that are grown up, married, and neither one of them I’ve encouraged to farm because it’s not economical. And they can make a lot more money by going to town unfortunately and working.**

This aspect of community change, and associated changes in neighboring, could also be attributed to the effects of the globalization of agriculture, evidenced by the influx of foreign-owned grass seed enterprises.

- **In fact if you’re driving around the valley and you see these big grass seed buildings.. there’s one called Bahrenbrug – a foreign company. DLF International used to be owned by a man that lived in Halsey. I sold him some seed ... and the bank was the Bank of Finland. I mean, they’re all international seed companies that are in here ... and they don’t really care about their neighbor... Y’know I mean it’s like you used to have that**
local owner and so he was working with you because he had to live with you... now those decisions are made overseas, they don’t care about the farmer in Corvallis, Oregon... Unfortunately that’s the reality, too...

Finally, there was a sense among some of the landowners that they were increasingly misunderstood by urbanites, and perhaps needed to do a better job of educating them about the realities of rural landowners and working landscapes.

- What would you like to tell us about your community?
  - I think the farmers and the city can kinda get along together. They try to. People need to be educated like you to know what’s going on out there. Too many people don’t understand... that the farmer is not out to destroy everything...

Given some of the students’ comments and questions about rural life, these perceptions may not have been unfounded.

For example, the students in one group did not recognize the term “Cat” (a commonly-used abbreviation for the Caterpillar brand name) used by one landowner to describe the training he was doing with forestry students at a nearby high school.

- The students come out to my tree farm and learn to timber cruise... and we even had Cat driving school ... where they all got on my Cat and drove my Cat around.
- Your Cat?
- A bulldozer... Caterpillar... Each kid got on it and pulled some logs around.
- That’s cool!

Another seemed to think that the weather on farms was different than that in the nearby city.

- Doesn’t it get really cold on your farm most of the time?
- Oh it gets cold, but not very bad. It’s about the same temperature as here.

Students were prompted by the interview guide to ask landowners about their community involvement, including whether they participated in the county fair. One student kept mistakenly referring to the county fair – a mainstay of rural life – as the “country fair” and was gently corrected by the landowner. Another farmer’s reference to his children’s involvement in 4H
(another mainstay of rural life) showing pigs revealed the student’s lack of understanding about such institutions, and a perception of livestock that seemed to confirm stereotypes about urbanites’ distance from the food they eat.

- Do you participate in local community activities like county fairs?
- I have 2 children that have been 4H-ers forever. They raise livestock and then we also are 4H leaders and my wife is the clerk for the auction for the Benton County Fair.
- [kids seemed puzzled]
- ... Head, heart, helping hands. Youth group. My kids raised pigs.
- I like piglets. They’re so cute. But I don’t like it when they grow.

Students also asked questions that revealed their lack of understanding about the nature of the crops raised by the landowners. For example, they asked both foresters and grass seed producers if they sold their products at the local farmer’s market.

- Do you participate in the Farmers Market?
- [chuckling] No I don’t, because you don’t take logs to the farmers market. I sell them directly to a sawmill.

In sum, our findings suggest that landowner-student interactions that took place during the site visits and interviews resulted in a greater understanding and awareness among students of the differences between rural and urban life, as well as the challenges confronting farmers and foresters in today’s global economy. They also got a sense of the ways in which the natural environment both enables certain activities, and constrains landowner decision-making and management.

4.2. Evaluations of Participant Learning

Given the multiple challenges we encountered in implementing the project (closure of the rural school, the relatively unique nature of this multi-grade, multi-cultural class, and addition of ten new students to the class over the course of the year), assessment of student learning was equally challenging. We used both student writing and student self-evaluations in our efforts to
assess learning. Adult participants filled out evaluations of the project and reviewed content of the book pages written about them and their land for accuracy.

4.2.1 Assessment of Student Learning from Written Assignments

Student writing assignments (in which they were asked to describe a farm and a forest as working landscapes that provide food, fiber, fuel, and fun for humanity), reflected a range of learning outcomes corresponding to the wide range of ages in the class (6th-8th grade), whether students were from a rural or urban background, and student interest and ability, as exemplified in excerpts below.

Forest can be sustainable if managed correctly. Most foresters want to make a profit and therefor want to have a sustainable forest. Some of these practices to make forests sustainable is to thin forest rather than clear cut it...[and] use sophisticated machinery to effectively cut and use all of the trees without compacting the ground too much....

Forests provide various things such as wood for houses and fireplaces. They get used for every day things tables chairs and even pencils. Forests are very important to our society and we also use them for fun...Its managed for us for everybody. They grow trees... the cycle is that they sell the wood then they get money they grow the trees back and it happens all over again, again and again.

The fresh scent of sap and earthy wetness is common among the trees. A forester makes his way through the foliage, deciding what he can do to help both the forest and himself. What tree should he cut? What ditch should he fill? It’s his job to make the right decision....But, economic pressure can influence decisions for everyone. Humans need more and more. Sometimes it’s a need too great for the forest to provide.

Hay diferentes tipos de bosques, los bosques tienen muchos arboles por todo al pededor, en los bosques hay muchos animals hay changos, mariposas, vivoras, muchos tipos de pajaros, hay muchas plantas.

A farm is a piece of land that is owned by people who want to make a profit by using the land. Whether it is growing crops on it or raising cattle, a farm is a place where it all happens.

Farms provide food by the food they grow...For fun make a corn maze.
Farms can be sustainable. They can provide food, fiber, money and fun for humanity. An example of a sustainable farm would be the beef farm owned by [landowner name]. He bails hay for his small herd. He grows clover alongside his regular grass to up the price of his extra bales. This also puts Nitrogen back in the soil.

All the field trips that we’ve been to I’ve discovered about a whole bunch of farms. Some of the farms we’ve gone to were: Christmas tree farms, corn farms, grass farms, and that is probably it.

Obviously, based on the study of a single class, we cannot draw conclusions concerning the degree to which the place-based curriculum described here may enhance learning. However, our observations of the class over the year and discussions with the classroom teachers suggested to us two hypotheses about this learning option that could be tested in the future:

1. The process of site visits, journaling, drawing, and direct interactions with landowners enhances students’ ability to make independent observations and communicate what they have seen themselves to others, rather than having someone tell them something which they are required to memorize and repeat back. The increasing level of detail in student journal entries and the drawings and text they produced for their books at the end of the year suggested that experiential learning of the type described here helps some students become better observers.

2. Many students, even those from rural areas, have a limited understanding of the day to day realities related to working landscapes (farm and forest) that can be improved through site visits and through personal connections made with the people who own and manage these lands.

Future research could address these hypotheses, and should more explicitly test before and after understanding and knowledge acquisition for classes using a place-based curriculum in comparison to a set of similar classes in which more traditional methods are used. It would also
be useful to determine which groups of students tend to like this approach to learning and report positively about their experience, which do not, and why.

4.2.2 Self-evaluations of learning

Two self-evaluation methods were used to evaluate student learning on the project. On the wrap-up day for the project, students were each given three self-stick notes and asked to place their self-stick notes on a poster in response to three statements. The position of the notes along the lines drawn on the poster indicated their agreement (Yes), disagreement (No), or uncertainty (Maybe) in response to the following statements:

1) I know more about farms and forests now.
2) I am better at talking and listening to adults now.
3) I am proud of the work we did in our class.

They were also asked to write comments on the notes if they wished to explain why they placed it where they did. Most students felt they had gained knowledge about farms, forests, and wildlife refuges (75 percent), and 25 percent reported that the project had helped them improve their speaking, listening, and presentation skills. Most also expressed a sense of pride in their accomplishments (65 percent), and reported enjoying their experience in the class, the field trips and the interviews. The two students who disagreed with statements 1 and 3 wrote on their sticky notes that they had joined the class late in the year. The six others who did not report agreement were in the uncertain portion of the poster, and several wrote “Maybe” on their note. The greatest level of disagreement and uncertainty was in response to question 2 (better at talking and listening to adults).
In another evaluation of student learning, students responded to writing prompts in a take-home writing assignment. Students were asked to respond to the questions:

1) What was one thing that you learned on this project?
2) What was one fun or interesting thing about this project?
3) What would you tell another student who might participate in this type of project?

We read and recorded student responses to each prompt, then identified emergent themes, assigned each response to the relevant theme, then pulled exemplar quotes to illustrate how specific responses would be coded to a particular theme. The 32 student responses received are summarized and presented in Tables 1-3. The specific themes common to student responses are identified in the column sub-headings, and the numbers of students whose response fit that theme are listed below. Comments representative of each theme (exemplar quotes) are listed at the end of the table.

<table>
<thead>
<tr>
<th>Table 1. Summary of student responses to prompt: What was one thing that you learned about on this project?</th>
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<tbody>
<tr>
<td>A) Land management, work</td>
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<td>14</td>
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</table>

Representative comments: A) “I learned how hard it is to manage sustainable landscapes”; “I learned about management practices like not cutting trees too close to the river” B) “about the variety of habitat”; “about the different plants” C) “I learned a lot about forests and farms, how they work and what people do in them” D) “One of the biggest things I learned was how to interact with the landowners in an interview”; “I learned how to interview people in a calm way”; “different landowners take care of their property differently” E) “Where things were”.

<table>
<thead>
<tr>
<th>Table 2. Student responses to prompt: What was one fun or interesting thing about this project?</th>
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<tr>
<td>A) Field trips</td>
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Representative comments: A) “It was fun because we got to go on cool field trips”;

URL: http://mc.manuscriptcentral.com/rjog  Email: jogjournal.csc.edu
“Going on the field trips and interviewing landowners. It was really fun working with them and learning so much about their management practices”. B) “We got to have cookies and interact directly with the landowners”; “We got to meet a lot of people, especially important landowners”. C) “Pretty much this entire project was totally fun!” D) “Drawing plants and animals and help restoring”; “…to plant native plants”; and E) “…making the coloring book and going on field trips”.

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<th>Table 3. Student responses to prompt: What would you tell another student who might participate in this type of project?</th>
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<tr>
<td><strong>A) Behavior</strong></td>
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Representative comments: A) “Pay attention”; “Listen to the teachers”; “When the teachers say long pants and closed toe shoes then do it”. B) “Get your work done before you go out and play”; “Find a way to keep track of pens and pencils”. C) “Don’t be shy when talking in front of people because they won’t understand you”; “Make sure to write somewhat detailed notes, because I couldn’t always figure out what my notes were about”. D) “Come here because we go on lots of fun trips”; “You will learn a lot by doing this and at the same time ur gonna have fun!”; “Bear with this and in the end you will be glad you got to learn this”. E) “I learned that hard work can be fun too”.

Landowner and land manager participants who attended the wrap-up day were positive about the project, and several participated in a follow-up meeting to pursue potential involvement in future collaborative efforts with OSU and the school district.

All but one of the written landowner participant evaluations were positive. The exception was a participant who was discouraged by the inaccuracies found during the review of his page in the student book. However, this review was valuable to us, as it revealed the tendency for students to blend information from two different properties (an organic Christmas tree farm and large forestry operation) that were visited on the same day.

5. Suggestions for Improving the Project Curriculum

Future efforts to implement this type of curriculum should consider modifications based on lessons learned during the Muddy Creek Project. In order to help the students organize and
distinguish the information associated with each site, we recommend that each site be visited on its own, separate day. When students visited more than one site on a given day, they tended to become confused and to “blend” information about these sites together. Students are processing substantial amounts of information, and care must be taken to structure the visits in ways that can help them organize that information.

Teachers should anticipate that the landowners will refer to the effects of globalization on their land management practices, as well as economic constraints, and incorporate lessons about globalization and basic economics prior to students’ meeting with them. Students might even be required to research aspects of the timber and grass seed industries, and map, for example, where grass seed is imported and exported now, and where local products were exported to in the past, compared to the present. This recommendation is based on the researchers’ observation that students were relatively quiet when landowners would discuss economic constraints and realities related to global markets, suggesting that the subject matter might be a bit over their heads. They did not demonstrate a strong ability to ask relevant follow-up questions.

The multiple references to how different conditions are for grass seed farmers located within the Muddy Creek Watershed versus outside the watershed suggests that future projects might benefit from including landowners from outside the Muddy Creek watershed, to facilitate comparison and student understanding of the unique constraints, obligations, and opportunities related to riparian and wetland areas farmers face.

Also, the students’ interest in understanding land use/land cover change over time suggests that future projects of this sort might benefit from showing students a time series of maps of the watershed.
In terms of social science themes, students could be introduced to themes like “community of interest” and “community of place” to help them perceive differences between neighboring in urban vs. rural environments. Students could be asked to list and describe their own communities of practice and map their communities of place, identifying their “neighbors,” and perhaps even measuring the distance between their house and their furthest “neighbor,” and comparing their maps to ones depicting their interviewees “neighborhoods.”

Finally, given students’ interest in the history of the watershed, and landowners’ role in the development of industry and infrastructure there, teachers might incorporate a toponymy exercise prior to interviewing landowners, some of whom have had roads and other landmarks named after their families.

6. Conclusions

This project allowed us to meet and learn from local landowners, and to develop both hypotheses concerning place-based learning and research questions for future studies in the region. It provided the middle school students with concrete examples of the physical and cultural geography of their own watershed, an improved understanding of landowner decision-making on farm and forest enterprises in the region, and insights into the global interconnectedness and economic drivers of agricultural markets. The interviews and site visits were valuable opportunities for the project investigators to gain insights into the perceptions of local landowners and the nature of the information they use in making land use and management decisions. The project provided middle school students with a field and project-based curriculum that attracted students to the class and which was valued by all participants and featured at community events in the region.
References


Figure Captions

Figure 1. Map of Muddy Creek watershed showing properties owned or managed by project participants.

Figure 2. Students interviewing a USFWS employee involved in land management at the Finley National Wildlife Refuge.

Figure 3. Students planting Nelson’s checkermallow at Finley Wildlife Refuge.
Table 1. Summary of student responses to prompt: What was one thing that you learned about on this project?

<table>
<thead>
<tr>
<th>A) Land management, work</th>
<th>B) Plants, wildlife, habitat</th>
<th>C) Forest and farms in general</th>
<th>D) Interview skills</th>
<th>E) Geographic locations</th>
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<td>14</td>
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Representative comments: A) “I learned how hard it is to manage sustainable landscapes”; “I learned about management practices like not cutting trees too close to the river” B)“about the variety of habitat”; “about the different plants” C) “I learned a lot about forests and farms, how they work and what people do in them” D) “One of the biggest things I learned was how to interact with the landowners in an interview”; “I learned how to interview people in a calm way”; “different landowners take care of their property differently” E) “Where things were”.

Table 2. Student responses to prompt: What was one fun or interesting thing about this project?

<table>
<thead>
<tr>
<th>A) Field trips</th>
<th>B) Interviews and talking to landowners</th>
<th>C) Everything</th>
<th>D) Restoration projects</th>
<th>E) Drawing and producing coloring book</th>
</tr>
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<td>10</td>
<td>8</td>
<td>7</td>
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Representative comments: A) “It was fun because we got to go on cool field trips”; “Going on the field trips and interviewing landowners. It was really fun working with them and learning so much about their management practices”. B) “We got to have cookies and interact directly with the landowners”; “We got to meet a lot of people, especially important landowners”. C) “Pretty much this entire project was totally fun!” D) “Drawing plants and animals and help restoring”; “…to plant native plants”; and E) “…making the coloring book and going on field trips”.
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<table>
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<tr>
<th>A) Behavior</th>
<th>B) Study skills</th>
<th>C) Interview skills</th>
<th>D) Encouragement</th>
<th>E) Tips for success</th>
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URL: http://mc.manuscriptcentral.com/rjog Email: jogjournal.csc.edu
Figure 1. Map of Muddy Creek watershed showing properties owned or managed by project participants.
215x279mm (300 x 300 DPI)
Figure 2. Students interviewing a USFWS employee involved in land management at the Finley National Wildlife Refuge.
469x352mm (72 x 72 DPI)
Figure 3. Students planting Nelson’s checkermallow at Finley Wildlife Refuge.
Appendix 1. Interview Questions

The class was divided into groups, and each group asked each landowner or manager interviewed their set of questions relating to one theme.

1) History of landowner and landowner’s family in Muddy Creek area, relationship to this place
   What has been grown on your land? What was this land used for before your generation owned it?
   Where are you from?
   When did your family first come to Oregon? What brought you/your family here?
   How long have you lived on your farm (land)?
   Do you have any kids, and if so are you planning on them taking over your farm?
   What would you like to tell us about the history of your farm that we haven’t asked in our questions?

2) Connection to the local community
   How far away is your nearest neighbor?
   How do your products get to market?
   Do you participate in annual community activities such as the county or state fair?
   Do you participate in the farmers’ market?
   Do you sell your products in the local community, state-wide, or internationally?
   What local or regional organizations do you belong to and/or participate in?
   Where do you usually see and talk to your neighbors?
   What would you like to tell us about your community that we haven’t asked in our questions?

3) Agricultural practices
   What kinds of crops or products do you grow on your farm?
   What else do you do on your farm (such as corn maze, pumpkin patch, hay rides)?
   What areas are used for different crops (please show them on the air photo)?
   What makes some areas suited for certain crops and not others?
   What are your goals for this farm/land? Can you show us places where you might choose to do some things differently?
   What would you like to tell us about your community that we haven’t asked in our questions?

3) Stewardship practices
   What do you do on your land to help conserve the soil?
   What do you do on your land to protect water?
   Do you have a riparian area on your farm (by riparian area we mean a piece of land by a pond, stream or some other natural source for water)
   Are you doing anything on your land to help wildlife?
What sources of information you use to make decisions about conservation practices on your land?
Can you show us on the air photo some of the places on your land where you are doing things specifically for stewardship?
What would you like to tell us about your stewardship practices that we haven’t asked in our questions?

4) Water resources
   How do you use water on your farm?
   Do you have wells, irrigation, streams or ponds used by livestock
   Do you have any problems with managing water resources on your farm?
   Do you have all the water you need for your farm?
   What practices do you use to manage riparian areas on your farm?

5) Constraints and difficulties faced in farming
   Are there things that keep you from doing what you think would be best for your farm?
   Are there some practices you think would help your farm or land that you haven’t been able to do?
   If you could do anything you wanted on your land, what might you do?
   What would you like to tell us about constraints or difficulties that you have in farming or managing forest property that we haven’t asked in our questions?
   If you had a grant of $500 to $1500 to use on your land, how would you use that money?

6) Decision-making on your farm
   What influences your decisions about your forest or farm operation?
   Who is usually involved in deciding what to do on your farm?
   What are/ have been your best sources of help and information about farming?
   What are / have been your best source of help and information about soil and water conservation and wildlife management?
   Do government programs that pay landowners influence your decisions?
   What would you like to tell us about decision-making on your farm that we haven’t asked in our questions?