Lodgepole Bucking Injury

Lessons Learned

Event Type: Bucking Accident
Date: September 11, 2014
Location: Kootenai National Forest

"I can't believe this just happened to me, I have been sawing for years."

Introduction

Following the lodgepole bucking injury, a team was formed to investigate the incident and prepare a Lessons Learned. The team was asked to gather facts, perform interviews, and visit the site to gather information needed. The Lessons Learned created from this information documents observations, what was done well, and what lessons were learned from the incident. These components provide the background and recommendations on what can be done to help prevent future incidents, and also help provide for better emergency response in the event of an incident.

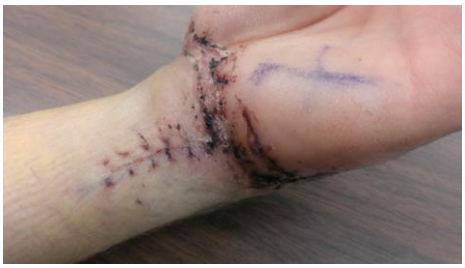
Accident Summary

On September 11, 2014 two Forest Service employees (employees A and B) were tasked with inspecting the boundary of a proposed burn unit and assessing the fireline prepared by previous employees. Employee A is a certified "C" Sawyer and employee B is a certified "B" Sawyer. Their task for the day was to cut snags that were near the fireline, to prepare the unit for prescribed fire operations (chainsaw work removing snags or dropping select timber). The employees checked out at the front desk for the unit. At 0800 hours, they arrived at the unit, unloaded their gear and began hiking the one mile to the unit. Following lunch at approximately 1400 hours, Employee A came across an lodgepole pine (LP) adjacent to a couple of mountain maple trees on a moderate slope. The LP was approximately 8" dbh and 65'in height with sparse vegetation on it. Employee B was approximately 3 tree lengths above Employee A cutting. After dropping the LP, Employee A moved on to an adjacent 24" Western Larch snag. After the larch was felled, Employee A immediately turned to buck the LP dropped prior to the larch which was lying across the fireline. As he finished the first bucking cut from the butt-end, the tree immediately sprung back and struck his lower legs, just above his boot tops. The force of the tree knocked his feet out from under him. "Coming to" he realized that his chainsaw was still running and that his left forearm and wrist was resting upon the idling chainsaw (saw chain was not moving). He experienced a sharp pain and noticed that blood was soaking through his shirt and glove. After getting to his feet, he cradled his arm and wrist and moved up the hillside to locate employee B who was sawing.

Employee B heard Employee A yelling for help and saw him coming up the hill towards him while grasping his left forearm and wrist. Employee B began first aid applying direct pressure to the hand and bandaging, assessing other injuries and noting bruising on the leg.

While employee B tended to the wound, Employee A used the radio to contact Forest dispatch to report the incident and request an ambulance. Due to the response time for an ambulance on the District and because of the work location, District personnel were dispatched with an ATV as requested by the injured employee to provide retrieval assistance. One of the employees dispatched is an EMT who also works for the local ambulance.

After calling in the incident, Employee A decided to make his way to the vehicle with the assistance of Employee B due to the severity of the injuries. After reaching an old road (grown in with alder and not drivable by vehicle), they were met by the District personnel with the ATV coming up the trail. Employee A began to experience more intense pain in the injured leg. The employee EMT did some initial assessments and Employee A was loaded onto the cargo rack of the ATV to ride the rest of the way back to the main road where they met the ambulance.



Once County Ambulance arrived at the Emergency Room, Employee A was stabilized and treated for his injuries. The injuries Employee A sustained were an approximately six-inch deep laceration to his wrist and lower forearm area, and a fracture to the left lower leg bone, Fibula. Both injuries required operations and will require Physical Therapy to regain strength, mobility, and sensation.

Observations

Work Preparation

- Employee had a month off from work due to newborn child; was first day back in the field. The presence of a newborn child may have contributed to possible fatigue.
- Had completed a Job Hazard Analysis (JHA) earlier in the season. Tailgates were completed throughout the season as well.
- The JHA did not address emergency evacuation.

Work Procedures

- There was no radio check-in upon arrival at worksite with location before work began; the unit does not require a radio-check-in before work begins as policy.
- Employee A stated the level of work for the day was a greater degree than anticipated
- Employees took a lunch break to prevent fatigue previous to the incident.
- The employee did not watch lodgepole fall to ground; thought it had fallen to the ground while in reality in had become intertwined in other trees causing multiple binds and did not reach the ground.

- Employee A was anxious to get to the more complicated large diameter larch snag; target-fixation on falling the larger/more complex tree.
- After falling the larch snag, the employee turned and immediately began to buck the downed lodgepole without a size-up; multiple binds were not recognized. Sawyer did not recognize his body position in relation to the butt-end of the LP when beginning his bucking operations. Once the sawyer began cutting at the butt-end, the differential pressure and tension contributed to the amount of force accelerated and absorbed by the lower legs, once the Sawyer made his release cut.
- While performing the bucking cut, the kerf did not indicate binds (spreading / pinching) to the sawyer.
- Tree strike happened instantly and did not allow employee time to avoid or react; employee was unsure of what had exactly happened beyond coming-to and recognizing injury.

Emergency Response

- The unit in this incident had not recently performed an emergency evacuation scenario.
- There was not a "saw" first aid (25 man pack) on site; employee B had a standard field first aid kit supplemented with large dressings.
- Employee A had a new model radio and Employee B was not carrying a radio and had received some training but was not as comfortable with the new radio as the old model.
- Employee B could not maintain direct pressure and use the radio so both for efficiency and to distract Employee A from the injury he had him contact Dispatch to request ambulance.
- Employee B had extensive First Aid experience; was a retired Coast Guard service-member with training beyond normal Forest employee.
- Employee A said his leg felt better when he was standing and wanted to walk out.
- Employee A walked about 1 to 1.25 miles on foot before being transported the final ¼ mile to the ambulance spot on the main road by ATV.
- The employees requested the ATV to meet them to speed up the evacuation.
- Local ambulance was unavailable (too few EMTs available to staff). Ambulance from adjacent town was dispatched (approx. 20 miles away).
- Local ambulance requested the County Ambulance (which was already out on a call) to respond to the call since the local ambulance could not respond to a call without two EMT's on-board.
- Local ambulance was not informed that one of the FS employees at the scene was an EMT and could provide care which delayed care for the patient.
- There was some additional County ambulance delay due to lack of communication at the Forest Supervisor's Office in the adjacent town. The ambulance contacted the front desk to verify the ambulance response need and the front desk attendee (who was temporarily filling in for front desk personnel) was unaware of the incident or ambulance request and did not forward the call to dispatch. Several calls were made back to attempt to verify.
- Both local and County ambulance responded to the scene in the end, with County arriving several minutes behind the local.
- Employee's emergency contact information was available; however, local unit requested Forest Dispatch to handle family contact for notification. Dispatch did not have the employee's emergency

contact information and other employees who were able to locate a cell phone number were found and used.

What was Done Well

- District personnel (unit EMT) had been proponent of employees carrying extra first aid materials for just such instances.
- Employee able to walk during the adrenaline rush; may have helped prevent onset of shock.
- The Forest has taken part in Medical scenarios and field exercises to increase and enhance employee preparedness; however, the unit in this incident had not recently performed an emergency evacuation scenario.
- All involved in the incident remained calm, decisive, and cooperative
- There was clear, concise communications with Dispatch
- Excellent initial medical care was provided and extra medical supplies were available from district personnel (employee B).
- Proper PPE was used during chainsaw operations and ATV usage.
- A FS representative met the injured employee and family at the hospital

Recommendations

- When employees have been out of the work routine for a period of time, supervisors should ensure that employees undergo a form of job refresher to ensure they are ready for a return to normal program of work.
- When actual workload does meet prior expectations, employees should pause to re-evaluate the working conditions and ensure time and resources are adequate to safely complete the job.
- Always perform a proper size-up; both falling and bucking. Observe the tree for binds or other complicating factors. Walk the tree if necessary. Always consider:
    - Slope
    - Tension
    - Compression
    - Directional Pressures/Binds
- Chainsaw operations are highly unpredictable and dynamic; experienced sawyers can experience a serious incident caused by complacency as well as a new sawyer. Follow precautions and protocols on every tree regardless of size and apparent complexity. Avoid “target-focusing” on more complex cuts / large diameter trees at the expense of those that are more routine.
- Before project work begins (high-risk, chainsaw, etc.), supervisors should check in with Dispatch upon arrival and provide project supervisor’s name, primary/secondary radio channel operating on, and possible MEDEVAC locations. Units should establish policy and enforce through project JHAs as applicable.

- To ensure safety of employees who may become seriously injured or become unconscious during work, consider establishing a protocol for employees to check on one another periodically when working apart or not within visual range, especially for high-risk activities such as saw work.
- All units should perform evac scenarios and become familiar with the Forest emergency evacuation protocol and field-size up cards. Ensure project JHA is reviewed (tailgate or other) throughout season as conditions change; ensure JHA has emergency procedures and evacuation plans documented.
- Prior to issuing new equipment ensure all personnel are trained and competent on equipment (radios, etc.)
- Review unit Medical Response Plan and Serious Accident protocols with Agency and volunteer personnel.
- Review and improve on employee Emergency Contact information availability.
- Identify Agency personnel with advanced First Aid training (First Responder, EMT) to raise employee awareness of available resources.
- Re-evaluate First Aid equipment/supplies for personnel involved in High Risk Activities (Saw, Fire, Aviation, etc.); provide additional Pressure Dressings, Tourniquets, and Splints. Have 20-man First Aid kits (or OSHA compliant “logging” First Aid kit) for all saw operations.

Exhibits

The following exhibits are provided to show the approximate lay of the tree with binds and the position of the sawyer when cutting.

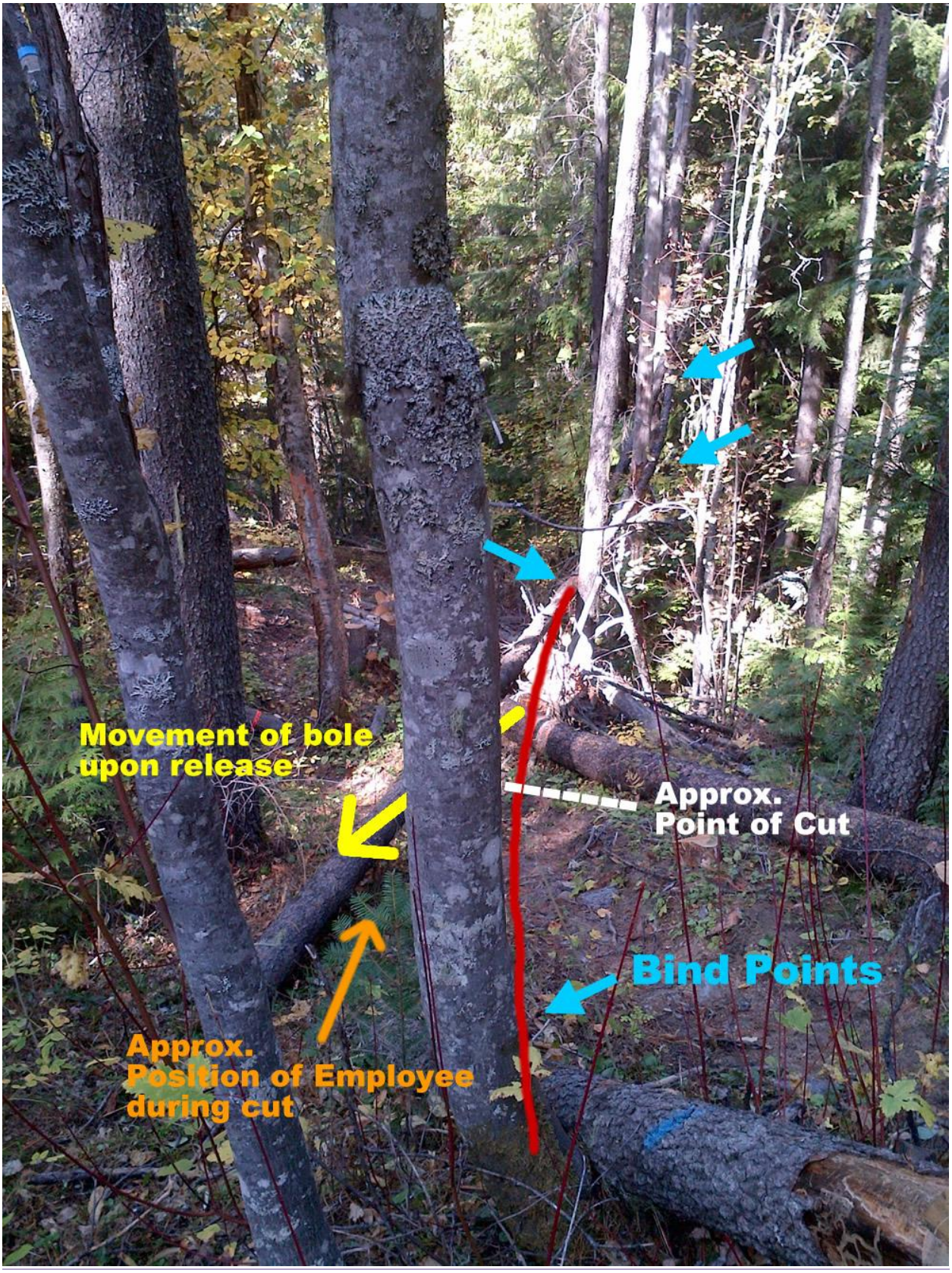

Movement of bole upon release
Approx. Point of Cut
Bind Points
Approx. Position of Employee during cut

Exhibit “A”

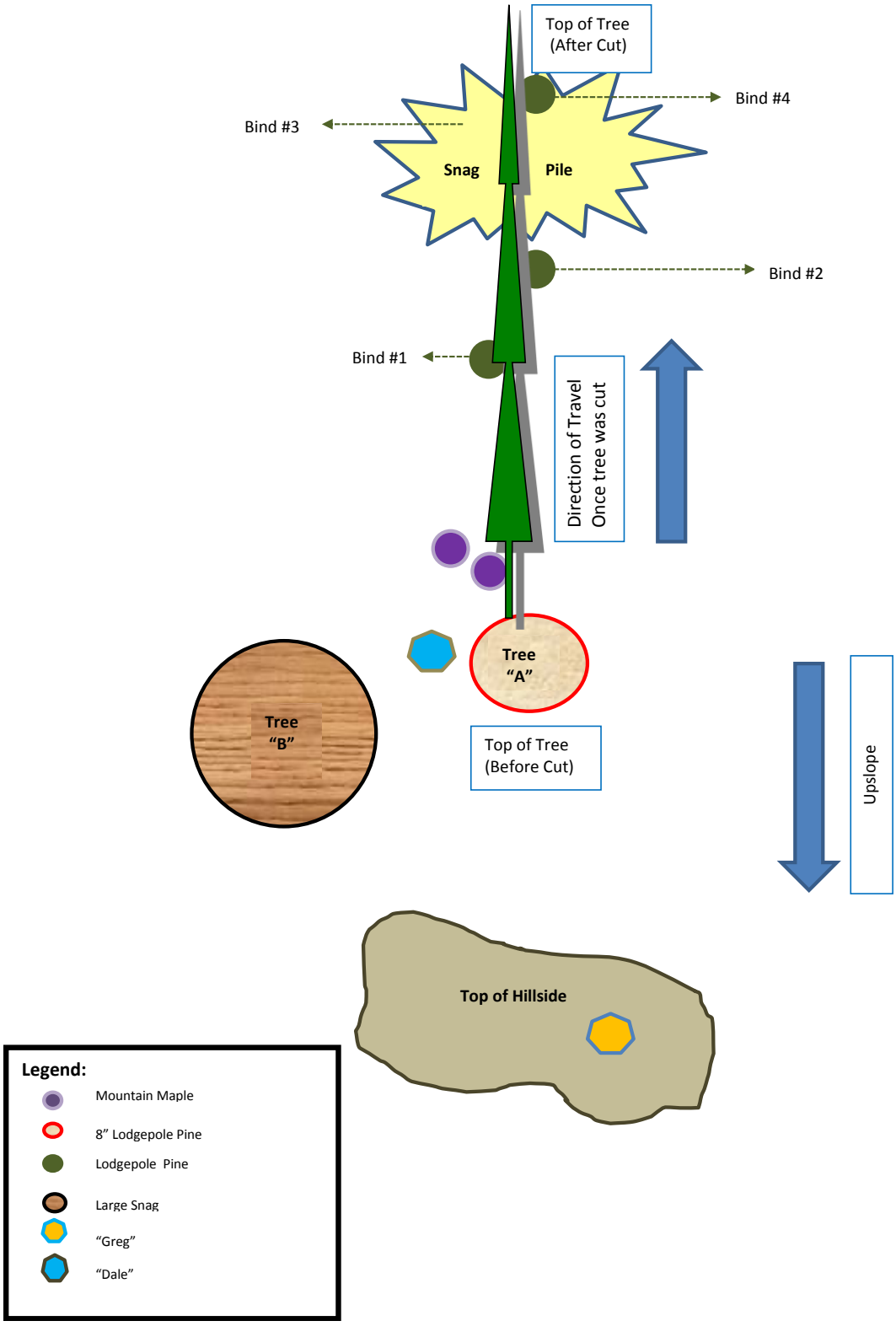

Top of Tree
(After Cut)
Bind #4
Bind #3
Snag
Pile
Bind #2
Bind #1
Direction of Travel
Once tree was cut
Tree
"A"
Tree
"B"
Top of Tree
(Before Cut)
Upslope
Top of Hillside
Legend:
Mountain Maple
8" Lodgepole Pine
Lodgepole Pine
Large Snag
"Greg"
"Dale"

Exhibit "B"