

**ARIZONA GAME AND FISH DEPARTMENT
HABITAT PARTNERSHIP COMMITTEE
HABITAT ENHANCEMENT AND WILDLIFE MANAGEMENT PROPOSAL**

Game Branch / HPC Project Number:	11-607
Possible Funding Partners:	

PROJECT INFORMATION

Project Title: Tonto National Forest Ecosystem and Wildlife Management Skid Steer

Region and Game Management Unit: Region 6 Units 22,23,24A

Local Habitat Partnership Committee (LHPC): Payson Natural Resources Committee	Was the project presented to the LHPC? YES[] NO[X]
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Has this project been submitted in previous years? YES[] NO[X]
If Yes, was it funded? YES[] NO[X] → **HCP Project #:**

Project Type: Vegetation and habitat improvement

Brief Project Summary:
 This proposal is for the acquisition of a Bobcat Skid Steer with attachments (tree shear, folks, six way dozer blade), and trailer (Appendix E.) Having this equipment available to the Tonto National Forest (Tonto NF) workforce would provide much greater opportunities to conduct habitat and ecosystem improvements as opposed to the traditional boundaries of a finite project completed by contracting. This equipment would maximize annual treatment acres by increasing production rates, by at least three fold over hand thinning only, while simultaneously reducing the cost per acre for treatments in non-forested ecosystems. Recent contract thinning estimates provide to the Tonto National Forest typical run around \$236.00 per acres not including contract administration, solicitation, marking, or archeological clearances. Bases on this figure, the onetime cost for the purchase of this equipment and attachments is less than contracting one 300 acre unit but will provide treatments on an exponentially greater acreage.

Big Game Wildlife Species to Benefit: 40% Elk, 30% Deer, 10% Bear, 10% Turkey, 10% Javelina

<p>Implementation Schedule (Month/Day/Year):</p> <p>Project Start Date: Immediately after delivery of equipment</p> <p>Project End Date: Life span of the equipment (10 plus years)</p>	<p>Environmental Compliance:</p> <p>NEPA Completed: YES[X] No[] N/A[] Projected Completion Date: _____</p> <p>State Historic Preservation Office - Archaeological Clearance: YES[X] No[] N/A[] Projected Completion Date: _____</p> <p>Arizona Game and Fish Department EA Checklist: N/A[X] To be Completed by: _____ Projected Completion Date: _____</p>
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PROJECT FUNDING

Special Big Game License Tag Funds Requested:	\$ 66,952.61 (1:3.8 at min use over 10 years)
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Cost Share or Matching Funds:	Minimum \$ 25,562.50 annual or \$255,625.00 over 10 years of minimum operation (300 hrs use)
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Total Project Costs:	\$ 322,577.61 over ten years at minimum operation
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PARTICIPANT INFORMATION

Applicant (please print): Zachary S Holder	Address: 1009 East Hwy 260 Payson, AZ 85541	E-mail: zsholder@fs.fed.us
Telephone: (928)-474-7917		Date: August 19, 2011
AGFD Contact and Phone No. (If applicant is not AGFD personnel): Jarrod McFarlin (480)-528-8531		
Project has been coordinated with: Jarrod McFarlin (AGFD), Natalie Robb (AGFD), Helen Graham (USFS-TNF), Rob Lever (USFS-ASF)		

NEED STATEMENT – PROBLEM ANALYSIS:

Landscapes across the Western United States wear the scars of catastrophic wildfire and decades of abuse and neglect. This often leaves outdoor enthusiast and land managers alike with the same mixed feelings of frustration and helplessness in how to prevent and heal these wounds. The Tonto NF is no exception to this. While projects such as the Four Forest Restoration Initiative (4FRI) aim to provide aid in restoring many of Arizona's forested habitats, it is only a small piece of a much larger and diverse ecosystem. Meanwhile, less attention is focused on woodlands, none-forested, and grassland communities which account for approximately 62 % of the Tonto NF.

In a study conducted by The University of Montana's National Center for Landscape Fire Analysis (UMT Fire Center) and the Clifton Ranger District of the Apache National Forest (Apache NF), non-forested (woodland and grassland) ecosystems experienced an approximant 8-13 % increase in tree density across the landscape during an eight year period from 2000-2008. (*E. Apland, C. Seielstad, Z. holder 2010.*) When comparing the landscapes below the Mogollon Rim with those on the Apache NF, a similar increase in densities is expected on the Tonto NF. Considering these numbers combined with average annual treatment accomplishments of approximately 18,000 ac/yr of the 2,869,763 million acre Tonto National Forest; the mathematics of successful landscape management began to reveal themselves. Yearly treatments account for approximately 0.06% of the landscape; a landscape that is increasing in wooded densities at an estimated of 1 to 1.62% annually.

Despite these daunting estimates, significant restoration treatments and management activities have and will to continue to be accomplished. In an effort to further expand our abilities to make positive changes on the landscape, the Tonto NF is soliciting aid in the acquisition of Bobcat Skid Steer. The primary purpose for this piece of equipment is to perform essential mechanical thinning in the woodland, none-forested, and grassland ecosystems. Historically, this type of equipment is typically contracted on a case-by-case basis for mechanical thinning/mastication. This requires the solicitation of earmarked funds for a particular piece of ground over a reliantly short period of time. While this method of accomplishing mechanical treatments has and will continue to play an important role in ecosystem management, it falls short of the full potential these tools provide. Currently there are thousands acres on the Tonto National Forest with completed NEPA and archeological clearances that are waiting to be treated. Simply put, there is more land available for mechanical treatment than specialized funding and equipment need to treat them. With the addition of a skid steer in the forest's arsenal, we could begin taking advantage of the numerous acres of land available for utilizing the existing workforce and operational funds.

PROJECT OBJECTIVES:

- Increase the number of non-forested ecosystem acres that receive treatments while reducing the overall cost pre/acre.
- Provide assistance to the Tonto NF and Arizona Game and Fish Department (AGFD) for current and future wildlife habitat, and ecosystem improvement projects that require light machinery.
- Isolate equipment cost to a single one time investment with long lasting savings and maximized habitat and ecological returns.

PROJECT DESCRIPTION AND STRATEGIES:

Use of this equipment in conjunction with Tonto NF and AGFD treatment priorities (including the Houston Mesa Restoration Project and Flying V & H Analysis Area) can reduce the overall cost of treatment in non-forested ecosystems, now and in the future, for agencies and wildlife conservation organizations. In the short-term, the acquisition of the machinery will allow for the swift implication of thinning treatments at a reduced cost across the Tonto NF where signed NEPA decisions exist. Over the long-term, this tool can increase interagency coordination of habitat restoration and enhancement as well as fuels reduction projects, providing a greater benefit at a reduced cost to habitats, communities, and the public whom enjoys them.

PROJECT LOCATION: All current and future NEPA and heritage approved

Cave Creek Ranger District

Currently no projects (Heavily impacted by Cave Creek Complex Wildfire outside of Dessert Ecosystem)

In Planning: grassland and cat claw treatments are in early project design phase within the Cave Creek Complex Fire areas are in the early planning stages.

Goble Ranger District

In Planning:

Approximately 90,000 acres

Mesa Ranger District

In Planning:

Approximately 40,000 acres

Payson Ranger District

Pine/Strawberry Wildland Urban Interface:

8,674 acres- Thin from below.

7,525 acres- Grassland restoration.

945 acres- Fuel-break construction and maintenance.

40,928 acres- Prescribed fire or vegetative maintenance.

Payson Wildland Urban Interface:

4,373 acres- Thin from below.

3,294 acres- Grassland restoration.

2,640 acres- Fuel breaks construction.

35,037 acres- Pile burning, broadcast burning, or vegetative maintenance.

1,350 acres- Dead of all species and all sizes may be cut within 200' of private lands.

Cut trees may be removed, lopped and scattered chipped or piled, and burned.

Christopher/Hunter Wildland Urban Interface:

10,838 acres- Thin from below.

970 acres- Shaded fuel-break construction and maintenance.

20, 550 acres- Pile burning, broadcast burning, vegetative maintenance.

Verde Wildland Urban Interface:

4,039 acres- Thin from below to 18 inches diameter at breast height (DBH).

6,671 acres- Thin from below to 9 inches DBH.

1,401 acres- Pinyon-juniper savanna restoration.

4,761 acres- Constructed fuel-breaks.

4,761 acres- Pile, broadcast and maintenance burning.

23,677 acres- Broadcast and maintenance burning.

37 miles- Road maintenance.

Myrtle Wildland Urban Interface: (Decision to be signed by end of 2011 calendar year)

10,000 ac. - Thin from below to be available

Pleasant Valley Ranger District

Cherry Analysis Area: 40,000

In Planning:

Flying V & H 10,000 ac

Tonto Basin Ranger District:

Range and wildlife Projects in planning stages: 20,000 ac.

LAND OWNERSHIP AT PROJECT SITE (Please state specifically if PRIVATE PROPERTY and provide landowner's name):

United State Citizens managed under the trust of The United States Forest Service Tonto National Forest

IF PRIVATE PROPERTY, IS THERE A STEWARDSHIP or LAND OWNER AGREEMENT BETWEEN THE LANDOWNER AND THE DEPARTMENT?

YES NO

HABITAT DESCRIPTION:

Juniper Woodlands – Most of this vegetation type occurs as an open woodland with an overstory of alligator juniper and a grassy understory. The canopy coverage of juniper is normally more than 10%. In some stands, Arizona pinyon pine (*Pinus fallax*), Arizona white oak (*Quercus arizonica*), Emory oak (*Q. emoryi*), turbinella oak, birchleaf mountain mahogany (*Cercocarpus montanus*), sugar sumac (*Rhus ovata*), skunkbush sumac (*Rhus trilobata*), desert ceanothus (*Ceanothus gregii*) may occur in substantial amounts but not as dense as in pinyon/juniper/oak woodlands. In other areas, with recent alligator juniper encroachment, the above species may be absent or occur only as seedlings or saplings associated with juniper nurse trees. Grazing pressure and lack of fire have allowed junipers and other woodland species to encroach into semi-desert grasslands. Most of the junipers are less than 50 years old. Herbaceous forage is normally much less than in the alligator juniper savanna type. In the past, many areas of alligator juniper woodland have been treated (pushed) with the management objective to maintain grasslands and to increase available forage. In recent years, these treated areas have not been maintained and, as a result, the areas now have dense stands of younger junipers. This type is found in the same ecotone as the pinyon/juniper/oak type.

Pinyon-Juniper Woodland - Pinyon pine and several different species of juniper characterize this woodland. The woodland grows from about 5000 feet to 7000 feet in parts of the state where annual precipitation is 12 to nearly 20 inches. The open nature of the woodland allows many kinds of shrubs, grasses, and wildflowers to grow among the small trees. The tree species of this community have inherited drought resistance from southern areas and cold resistance from northern areas. Juniper tends to grow in more arid areas as its scaled foliage allows it to conserve water more effectively than pinyon pine, which grows in slightly wetter areas.

Evergreen Madrean Woodland - This woodland has its origins in the Sierra Madre mountain range of Mexico and reaches its northern extent in the ranges of southeastern Arizona. The climate of the woodland is characterized by mild winters with some rain and occasional snow and wet, warm summers. Evergreen oaks dominate with junipers and sometimes pines also growing in the mix. Lovely open savannas are common in some areas with numerous grasses growing beneath the oaks. Common tree species include Emory Oak, Mexican Blue Oak, Silverleaf Oak, Alligator Juniper, and Mexican Pinyon Pine.

Semi-desert grasslands occur in central and southern Arizona and here grasses are often mixed in with succulent plants such as prickly-pear cactus, yucca, or century plant. In other areas small shrubs or desert "trees" such as mesquite grow with the grasses. These areas generally have less than 10 % wooded canopy.

ITEMIZED USE OF FUNDS:

Special Big Game License Tag Funds

\$ 66,952.61 for purchase of skid steer , sheer, folks, dozer blade and trailer

Cost Share or Matching Funds

Training and wages of Operator(s), Fuel, service, and maintenance of equipment-

Training and wages of Operator(s) fuel, preventative and incidental maintenance of equipment will be covered by the Tonto NF for a minimum of 300 hours of operation. Funds for additional hours of operation will be cover through grants, emergency incident funds, and internal cost sharing.

Machine Operator: \$205.00-\$260.00 (GS-5-7) per day

Machine spotter/Swamper: \$205.00-\$260.00 (GS-5-7) per day

Fuel/lube: \$35.00 per day (10 gal. At \$3.30/gal) per day

Annual maintenance/service: \$2,500.00 annually

Hauling Truck: \$ 60.00 per day

$\$260.00 + \$260.00 + \$35.00 + \$60.00 = \$615.00$ per 8 hour day of use

$\$615.00(300 \text{ min hrs use}/8 \text{ hr days}) = \$23,062.50$

$\$23,062.50 + 2,500 \text{ annual maintenance} = \$25,562.50$ minimum annual utilization Matching

$\$25,562.50 \times 10 \text{ year minimum life span of machine} = \$255,625.00$

Administration cost of NEPA, surveys. –

All projects this equipment will be initially used for have signed NEPA decisions. Archaeological surveys have been completed in the majority of areas where mechanical thinning is proposed. Sources for future NEPA analyses and survey costs will be determined in the early planning stages as new projects come online.

LIST COOPERATORS AND DESCRIBE POTENTIAL PARTICIPATION:

It is the Tonto NF's goal to increase coordination with AGFD personnel, wildlife conservation organizations, and the local Habitat Partnership Committee during the design, planning, and implementation phases of habitat enhancement projects. While thinning to increase forage and browse will be the prevalent cooperative use to this equipment, an increase in communication between all parties will lead to this equipment being utilized for a wider range of potential habitat improvements, such as the transportation of materials and cleaning of wildlife water sources, the construction of livestock and wildlife exclosures, improvement of prescribed fire control lines, and the application of agency-approved herbicides. Having the necessary equipment will also allow for treatments to occur over larger areas at a smaller cost to the Tonto NF, AGFD, wildlife conservation organizations, and the local Habitat Partnership Committee.

PROJECT MONITORING PLAN:

The unitization of the equipment will be tacked on a daily basis by the equipment operator. The Operator will tack the number of hours utilized, acres treated, and the associated project. A the end of the physical year this data will be summarized and submitted to the Arizona Habitat Partnership Committee as well as the Tonto National Forest's Fire, Ecosystem, and Fleet staff officers

PROJECT MAINTENANCE:

As part of the cost share for this equipment, the Tonto NF will assume all operational cost of operator, fuel, preventative and incidental maintenance for a minimum of 300 hours of operation annually. Additional cost of fuel, operator, and maintenance will be acquired through grants, incident replacement, or cost sharing within agency functions.

PROJECT COMPLETION REPORT TO BE FILED BY:

The Tonto NF's Fuel Crew will be the primary steward of this equipment. It will be the responsibility of the crew's Primary Operator to provide an annual summary of the acres treated by project and a cost analysis at the end of each fiscal year (September 30) to the AZHPC.

ARIZONA GAME AND FISH DEPARTMENT **TREE SHEARING WORKSHEET**

PROJECT TITLE: _____

1) What is the estimated acreage of the project?

It is estimated the approximately 40% of the TNF can utilize this equipment for directly for thinning, but will have benefits to the entire forest its other uses.

2) How are the trees going to be cleared? (Agra-axe, chain saw, push):

This equipment will allow mechanical cutting of tree species utilizing an agra-axe. In the "Forestry" configuration this equipment can cut tree form species up to 14" DHB and under 80' in height utilizing its integrated grapple. In the "Rancher" configuration this system can cut brush and shrub species up the 14" in any give stem or group of stems. While simultaneously applying herbicides to the stumps (Herbicides are currently under the final analysis stages for approved agency use.) The six-way dozer blade can a will be utilized to push over small and dead standing brush and shrub species. In all most all application utilizing this pieces of equipment there be chainsaw support for bucking or work in conjunction with the mechanical operations.

3) What is the estimated number of trees per acre?

With the high level of variation across the Tonto NF's non-forested ecosystems, it is difficult to provide an accurate estimate of trees per acre. Utilizing the 1- 1.62% annual increase in tree density found in the UMT Fire Center and Apache NF's study, necessary treatment levels can be projected. Providing tree densities increased around 1% per year over the past 50 years of active fire suppression, it can be inferred that current density levels would need to be reduced by approximately 30-40% to achieve similar stocking levels of the early 1960's.

4) Describe trees to be cleared (species, estimated diameter, single-stem, multi-stem):

All species under 14" DBH/DRC in any give stem can potentially be cleared (dependent on site's NEPA) utilizing the Dymax 14" sheer in either the "forester" (pine, conifer) or "Rancher" configuration.

5) Describe terrain (slope, soil type, rocks)

All activities involving this machinery will occur on slope less than twenty percent as a safety mitigation. To minimize effects to soil, light machinery will only be used on soils that are moderately to highly resistance to erosion and compaction and when soils are dry or hard frozen. On the Tonto NF, the landscape is moderately rocky, but is less than that of other areas in which this equipment is currently being utilized on other Forests in the Region. Treatment in excessively rocky area will be at the discretion of the primary operator with heavy consideration given to wear on the equipment and the ecology of the site. Alternative treatment methods may be utilized such as chainsaws.

6) Please list any special land management status for the project site (e.g. Wilderness, National Park, National Monument). If private land, list landowner.

All activities will occur on Federal lands that have signed NEPA decisions and appropriate archaeological clearances. If the equipment is required for an emergency operation (such as a wildfire), the necessary approvals and precautions will be implemented.

7) **Please provide the following information about access to the proposed site:**

Type of access (mark one): 2x4 vehicles 4x4 only Foot only**

**If foot access only: Distance in miles: Approx. hiking time:

Does access to this site require crossing private or tribal lands? YES NO

Is the site relatively accessible for tree shearing equipment? YES NO

Please describe any restrictions to public access:

Public access will only be restricted in the immediate work area (500 ft radius) of the machine while it is operation to provide for safety.

Appendix E

Cost Break-out	
Bobcat S750 Skid Steer	\$46,429.00
Dymax Tree Shear	\$10,964.20
Heavy Duty Pallet Forks	\$1,448.00
80" Six-way Dozer Blade	\$3,530.00
12000 lbs. Equipment Trailer	\$4,581.41
Grand Total: \$66,952.61	

Appendix E.1Bobcat S750 Skid Steer Specs/Pricing

Appendix E.2Dymax tree Shear Specs/Pricing

Appendix E.3Heavy Duty Pallet Forks Specs/Pricing

Appendix E.480" Six-way Dozer Blade Specs/Pricing

Appendix E.512000 lbs Equipment Trailer Specs/Pricing

Appendix E.1
Bobcat S-750 Specification



Engine Cooling	Liquid
Emissions Tier (EPA)	Tier 3
Engine Fuel	Diesel
Horsepower	85 HP
Turbocharged Engine	Yes
Rated Operating Capacity (SAE)	3200 lbs
Tipping Load	6400 lbs
Operating Weight	8730 lbs
Travel Speed	7.1 mph
Travel Speed (2-speed option)	12.3 mph
Fuel Tank	27.2 gal
System Relief @ Quick Couplers	3500 psi
Auxiliary Std Flow	23 GPM
Auxiliary High Flow	36.5 GPM
Length	141.6 in
Length without Attachment	114.3 in
Length with Standard Bucket	141.6 in
Width	72.1 in
Width (with bucket)	74 in
Height	81.3 in
Height with Operator Cab	81.3 in
Height to Bucket Hinge Pin	132 in
Reach @ Maximum Height	31.5 in
Turning Radius	85.8 in
Wheelbase	48.3 in

Description	Part No	Qty	Price Ea.	Total
S750 Bobcat Skid-Steer Loader	M0079	1	\$34,964.00	\$34,964.00
A91 Option Package	M0079-P01-A91	1	\$6,896.00	\$6,896.00
Cab enclosure with Heat and AC				
High Flow Hydraulics				
Sound Reduction				
Hydraulic Bucket Positioning				
Power Bobtach				
Deluxe Instrument Panel				
Keyless Start				
Two Speed Engine and Suspension seat				
Selectable Joystick Controls (SJC)	M0079-R01-C04	1	\$1,539.00	\$1,539.00
Air Ride Seat 3pt Belt	M0079-R05-C12	1	\$221.00	\$221.00
12-16.5, 12 PR, BOBCAT SEVERE DUTY-POLY FILL TIRES	M0079-R09-C05	1	\$1,166.00	\$1,166.00
Polycarbonate Door Kit	7128395	1	\$1,099.00	\$1,099.00
Polycarbonate Rear Window Kit	7128389	1	\$544.00	\$544.00
			Grand Total:	\$46,429.00

Appendix E.2
Tree Shear Attachment Specifications

Forester Configuration

Rancher Configuration



Item Description	Qty	List Price	Gov Price (-15%)
Dymax 14" Forestry Tree Shear <ul style="list-style-type: none"> • Double Grapple Arms. • Soid Cast Steel Shear Arm • Universal Skid Steer Coupler • Closed Arm Design • Double Bevel Blades 	1	\$10,396.00	\$8,836.60
Dymax Brush Rack Conversion w/ mounting hardware	1	\$867.06	\$737.00
Jumper Hose Assembly with Quick Couplers	1	\$288.00	\$244.80
Dymax Spray kit for Ranch Axe/Tree Shear Installed on above shear	1	\$1,348.00	\$1,145.80
Grand Total		\$12,899.06	\$10,964.20

Appendix E.3

Fork Attachment Specifications



Operating Weight	470 lbs
Length	N/A
Width	51.5 in
Height	49.1 in
Fork Width	4 in
Number of Teeth Shipped	0
Max Number of Teeth	2
Frame Weight	470 lbs
Pallet Fork Width	56.4 in

Description	Part No	Qty	Price Ea.	Total
Pallet Fork Frame, Heavy Duty	7109332	1	\$1,004.00	\$1,004.00
--- 48" Pallet Fork Teeth	6541518	1	\$444.00	\$444.00
			Grand Total:	\$1,448.00

Appendix E.4

80" Six-Way Dozer Blade Specifications



Operating Weight	950 lbs
Cylinder Bore	N/A
Cylinder Rod	N/A
Cylinder Stroke	N/A
Length	31.8 in
Width	80 in
Height	25 in
Oscillation	8 +/- deg
Angle	30 +/- deg
Blade Height	24.1 in
Cylinders	3
Skid Shoes	Adjustable
Working Width (Fully Angled)	69.3 in
Cutting Edge (reversible)	0.5" x 6"
Working Width (Fully Angled)	N/A
Cylinders	N/A
Optional Rubber Cutting Edge	N/A
Steel Cutting Edge	N/A
Trip Springs	N/A
Degree of Angle Right or Left	N/A

Description	Part No	Qty	Price Ea.	Total
80" Dozer Blade, 6-Way	6905884	1	\$3,530.00	\$3,530.00
			Grand Total:	\$3,530.00

Appendix E.5

12,000 lbs 18 foot Tandem Axle Equipment Trailer Specifications



G.V.W.R	12,000
Coupler	Forger 2-5/16
Jack	7K Drop Jack
Tongue	Integral w/Fame
Frame	8" Channel
Cross members	6" Channel
Fenders	9'x72" Diamond Plate
Axles	(2) 6,000 lbs EZ-lub
Brakes	Electric
Suspension	Multi-Leaf W/ Equalizer
Wheel	16 x 6
Floor	2" Pine
Electrical Plug	7-way RV

GSA Advantage Pricing:
12EQ-18

Mfr Part No.: 12EQ-18
Contractor Part No.: 12EQ-18
Manufacturer: BIG TEX TRAILER MFG., INC.
Contract No.: GS-30F-0016W (ends: Jan 10, 2015)
MAS Schedule/SIN: 23V/023 101
Warranty: STANDARD WARRANTY
Made In: UNITED STATES OF AMERICA
Order Increment: 1

Grand Totals: \$4,581.41