Rapid Monitoring Protocol

Relative Cover is used for all cover class determination

Relative Cover: Monitors determine cover **relative to the total vegetation cover**.
The following examples are explaining relative cover

> If 60% of a site is bare ground with no overstory, then Monitors should mark "40%" for Total Canopy Cover. Monitors should then consider what the tamarisk cover is for the remaining 40% only- do not consider the area of bare ground with no overstory. In this example if half of the total veg cover is tamarisk, then the value to record is 50%- even though only 20% of the site is covered with tamarisk.

> For a site that is at least 90% covered with vegetation, which is probably the case for most riparian sites, there is very little to no difference between total/absolute and relative cover. (For sites that are 100% covered with vegetation, there will be zero difference between total/absolute and relative cover.)

Method: Monitors walk entire site before filling out data columns. The goal is to get get eyes on the entire site between the two monitors. After walk-through, monitors come up with individual numbers for each coverclass, discuss, and ultimately come up with a consensus.
Atleast two people are always needed for monitoring since two sets of eyes are more accurate than one, biases are more likely to cancel out, and different portions of the site seen by different people will be accounted for. All monitors go through training prior to start of season.

Collection Method: ArcGIS Desktop, ArcOnline, Collector

Rapid monitoring data is collected through a rapid monitoring feature class. This feature class is accessed through the DRRP Arc Online account. Attributes for the rapid monitoring feature class are provided in the table below. Pertenant feature classes are added to a map in ArcOnline and then downloaded to tablets/phones through the Collector app for data collection in the field.

Rapid Monitoring Data Collected: The name of each attribute, an explanation of each, and example data is provided. If (dropdown) is indicated then a dropdown menu can be created for this column to speed up data collection.

DRRP_ID	Native_Species_1	Native_Species_2	Invasive_Species_1	Relative_Cover_Invasive1	Invasive_Species_2	Relative_Cover_Invasive2	Invasive_Species_3	Relative_Cover_Invasive3	Invasive_Species_4	Relative_Cover_Invasive4	Relative Cover Native	Evidence_Natural_Recruitment	Absolute_Veg_Cover	Segment_ID	Year	Share
Site being monitored	Most abundant native species on site	Second most abundant native species on site	Always Tamarisk even if there is not any on site	Relative Cover of Tamarisk across the entire site (includes resprouts)	Most abundant invasive from species of concern list (besides Tamarisk)	Relative Cover of Invasive Species 2 across entire site (use invasive species inventory to help)	Second most abundant invasive from species of concern list (besides Tamarisk)	Relative Cover of Invasive Species 3 across entire site (use invasive species inventory to help)	Third most abundant invasive from species of concern list (besides Tamarisk)	Relative Cover of Invasive Species 4 across entire site (use invasive species inventory to help)	Relative cover percentage of all native species across the site	Does the site meet the willow and/or the cottonwood passive recruitment threshold?	Percentage of site that is covered with vegetation - might be easier to think of percentage of bare ground first	Segment tht the site is in (look at the segment ID field)	Range, year of monitoring into the next year	Don't worry about this field - it should be auto-filled
GJ-BLM-14	inland saltgrass	fourwing saltbrush	Tamarisk	11-20%	Russian knapweed	21-30%	Hoary Cress	11-20%	Canada Thistle	0-5%	31-40%	YES	81-90%	RS_15	2017-2018	Public

Acreage	Owner	Survey_Time	Name of Data Collectors	Recruit Notes	Tamarisk Resprout Notes	Cheat_Present	Koch_Present	R_Thist_Present	CKR_Notes	Beetle	Weevil	Defol_Notes	Cattle	Grazing	Wildlife	Logistical Comments
Acreage of the site - should be auto-filled	Land owner or manager	Date and tiem of data collection	People conducting survey (dropdown)	Describe or list native species that are producing seedlings, coming up in bare ground, producing seeds, spreading and producing shoots, etc.	Describe state of tamarisk resprouts - Include relative cover of tamarisk resprouts	Is cheatgrass present on the site? (Y/N)	Is kochia present on the site? (Y/N)	Is Russian thistle present on the site? (Y/N)	Describe extent of cheatgrass, kochia, and Russian thistle (minimal, moderate, or extensive)	Look for the Tamarisk leaf beetle and larva on Tamarisk trees around the site. Is the beetle and/or larva present?	Look for Coniatus weevil and baskets on Tamarisk trees around the site. Is the weevil and/or baskets present?	Describe the level of tamarisk defoliation seen on site (i.e. slight tip defoliation, extensive yellowing and defoliation, etc)	Are there signs of cattle on the site (cow paddies, hoof prints, etc) are the signs Fresh or Old?	What is the average stubble height across the site?	What wildlife was seen onsite? What wildlife signs were seen?	Key Info Regarding Accessing/ Navigating Site (e.g. need boat to access, location of river crossing, gate codes, etc)
4.63	GJ BLM	7/25/2018 11:50	E. Kasyon & K. Scott	patches of inland saltgrass coming in, small saplings of fourwing saltbrush and suaeda throughout the site	6-10%, concentrated in willows along the shore	Yes	Yes	No	C moderate, K extensive	Beetle and Larva	Coniatus and Baskets	severe yellowing and defoliation	Yes, Old	4 inches	Bear scat seen throughout site, saw black-tailed jack rabbit and cottontail rabbits	across river from main road

Dropdown Menus (Domains): Here are the dropdown menus for columns that require them

Invasive Species (1-4)	Cover* - menu used for all Cover columns	Beetle	Weevil	Cattle	Grazing/ Utilization
Canada Thistle	0%	Beetle	Coniatus	Cown onsite	≤ 2 inches
Hoary Cress	1-5%	Larva	Baskets	Yes - Fresh	4 inches
Russian Knapweed	6-10%	Beetle and Larva	Coniatus and Baskets	Yes - Old	≥ 6 inches
Yellow Starthistle	11-20%	None	None	No	
Common Reed	21-30%				
Tamarisk	31-40%				
Russian Olive	41-50%				
Siberian Elm	51-60%				
Perennial Pepperweed	61-70%				
Musk Thistle	71-80%				
Purple Looestrife	81-90%				
	91-95%				
	96-100%				

*These cover classes were adopted in 2017 at the direction of Peter Skidmore

Invasive Species Data Protocol

Invasive Species: Certain noxious weed speces are inventoried and mapped to inform future treatments. Polygons are always created for invasive species inventory even if the infestation is only 1 tree.

	Weed species of concern are:	Plant Codes:	Scientific Names:
	Canada Thistle	CIAR4	Cirsium arvense
	Musk Thistle	CANU4	Carduus nutans
	Russian Knapweed	ACRE	Rhaponticum repens
	Hoary Cress	CADR	Lepidium draba
	Yellow Starthistle	CESO3	Centaurea solstitialis
	Phragmites (Common Reed)	PHAU7	Phragmites australis
	Russian Olive	ELAN	Elaeagnus angustifolia
	Siberian Elm	ULPU	Ulmus pumila
	Perennial Pepperweed	LELA2	Ledidium latifolium
	Purple Loosestrife	LYSA2	Lythrum salicaria

Collection Method: ArcGIS Desktop, ArcOnline, Collector

Invasive species inventory data is collected through an invasive species inventory feature class. This feature class is housed within an internal SCC database. Attributes for the invasive species inventory feature class are provided in the table below. Pertenant feature classes are added to a map in Arc Desktop which is published to ArcOnline and then downloaded to tablets/phones through the Collector app for data collection in the field.

Invasive Species Data Collected: The name of each attribute, an explanation of each, and example data is provided. If (dropdown) is indicated then a dropdown menu can be created for this column to speed up data collection.

Segment_ID	Inventory_ID	Inventory_Date	Plant_Code	Scientific_Name	Common_Name	Id	Name	Acreage	Pct_Upland	Age_Status	Access	Height
Segment tht the site is in (look at the segment ID field)	Same as the DRRP_ID	Date	Code for plant being recorded			don't worry about this coumn	don't worry about this coumn	Look at top of form after creating polygon, record acreage	What percentage of this infestation is upland	general age of population (mature, bud, flowering, seeding, senescent, rosette, mix, etc.)	How easy is it to get to the site to treat the infestation?	Average height of plants (inches)
RS_15	GJ-BLM-14	7/24/2018	CIAR4	Cirsium arvense	Canada Thistle			0	5.532	10 mature	poor	6

Treatment	Other weeds	PhotoRef	Other_Veg	PctCov	Share	Notes	Relative_Cover					
What treatment would be best for this infestation? (hand, mechanical, spraying, etc)	don't worry about this, we make polys for all weeds of concern	did you take a picture? Record the photo ID	Make note of vegetation surrounding and within the infestation. Make special note of fragile, sensative, or rare natives	Within the infestation polygon, what is the percent cover?	don't worry about this	Anything else worth mentioning about the infestation?	don't worry about this					
spraying		2006_72	coyote willow, NM privet	50	<Null>	watch out for barbed wire	<Null>					

Passive Recruitment Protocol

Passive Recruitment: Site meets passive recruitment if it meets one of the two criteria. These were created to assess post-treatment recruitment.

Willow Criteria: Site meets willow threshold if there are atleast 100 stems, that are at least 0.5 meters in height, present.

Cottonwood Criteria: Site meets the cottonwood threshold if there are at least 20 cottonwoods between 1 and 10 years of age that are greater than 1 meter in height.

Bank type and presence of salinity/alkalinity is also collected in order to help determine why passive recruitment may not be occurring on a site.

Method: Monitors walk entire site before filling out data columns. The goal is to get get eyes on the entire site between the two monitors. Monitors are counting young cottonwoods and assessing willow cover while walking the site.

Collection Method: ArcGIS Desktop, ArcOnline, Collector

Passive recruitment data is collected through a passive recruitment feature class. This feature class is housed within an internal SCC database. Attributes for the passive recruitment feature class are provided in the table below. Pertenant feature classes are added to a map in Arc Desktop which is published to ArcOnline and then downloaded to tablets/phones through the Collector app for data collection in the field.

Passive Recruitment Data Collected: The name of each attribute, an explanation of each, and example data is provided. If (dropdown) is indicated then a dropdown menu can be created for this column to speed up data collection.

Date	Names of Data Collectors	DRRP ID	Actual Cottonwood Count	Actual Willow Count	Inventory Rigor Cottonwood	Inventory Rigor Willow	Cottonwood Threshold Met	Willow Threshold Met
Date and time of data collection	People conducting survey (dropdown)	Site being monitored	The number of small cottonwoods counted on site. If more than 20 just put >20 here	The number of willow stems on site. If more than 100 just put >100 here	Indication of quality of data if willow threshold is met (dropdown)	Indication of quality of data if cottonwood threshold is met (dropdown)	Are there atleast 20 cottonwoods between 1 and 10 years of age and >1m in height? (dropdown)	Are there atleast 100 willow stems that are atleast 0.5 m in height? (dropdown)
8/16/17 10:33 AM	E. Kasyon & K. Scott	GJ-BLM-14	5	>100	May have missed some cottonwoods	Threshold Met	Site Does Not Meet Cottonwood Threshold	Site Meets Willow Threshold

Bank Type	Salinity/ Alkalinity/ White Crust	Comments
Type A: gradual slope from upland to river. Type B: cut or steep bank. Other: a mix of Type A or B (i.e. 40% Type A, 60% Type B) indicate other type in comments	Is there any sort of white crust along the bank? (dropdown)	Anything else worth mentioning?
Type B	Yes, Minimal	Willows were isolated on upstream end of site

Dropdown Menus (Domains):

Inventory Rigor (for both cottonwoods and willows)	Cottonwood Threshold Met	Willow Threshold Met	Bank Type	Salinity/ Alkalinity/ White Crust
May have missed some cottonwoods	Site Meets Cottonwood Threshold	Site Meets Willow Threshold	Type A	Yes, Minimal
May have missed some willows	Site Does Not Meet Cottonwood Threshold	Site Does Not Meet Willow Threshold	Type B	Yes, Extensive
Threshold Met			Other	None