

Insect and Disease (IDS) Dataset Readme

File geodatabase contents:

Includes data from legacy paper sketch maps, legacy Digital Aerial Sketch Mapping (DASM) system and current Digital Mobile Sketch Mapping (DMSM) system

- **DAMAGE_AREAS_FLAT:** delineated areas of current year's damage observed during surveys.
 - **Legacy paper and DASM polys:** features describe areas "with" damage. Not all trees within the areas may have damage. Also includes data that may have originated as "points", but were buffered and converted to polygons to meet legacy standards for inclusion in the national database.
 - **DMSM:** features describe areas "with" damage, but new PERCENT_AFFECTED field characterizes damage intensity by the percent of the live and standing dead trees within the feature that are damaged/recently dead. DMSM also has two types of area features.
 - **Grid cells:** cell-based polygons for 240, 480, 960 or 1920 square meters. Used to capture damage where the extent is difficult to characterize, may extend beyond the sight/mapping distance and/or damage is widespread, diffuse and difficult to render precisely.
 - **Polygons:** Used to capture areas of tree damage that are discrete and obvious from the air and easy to locate and orient on base data.
- **DAMAGE_POINTS_FLAT:** points detail small clusters of tree damage where the extent of the damage (size and shape) is less important than the location. Points originate from DMSM data only.
- **SURVEYED_AREAS_FLAT:** areas that delineate survey boundaries.
- **IDS_Rollup (Optional):** table that lists ID numbers for features in the DAMAGE_AREA_FLAT or DAMAGE_POINTS_FLAT feature classes that participate in a "Rollup" summary. Not all features participate in a Rollup. Some participate in more than one.
 - **DAMAGE_AREA_IN_ROLLUP, DAMAGE_POINT_IN_ROLLUP relationship classes:**
Describes the one-to-many relationship between DAMAGE_AREA_FLAT, DAMAGE_POINT_FLAT and the IDS_ROLLUP table. The OBSERVATION_ID is the key.

Attribute Field Names and Descriptions

FIELD NAME	DESCRIPTION
OBJECTID	ArcGIS generated ID
DAMAGE_AREA_ID	footprint area feature ID
DAMAGE_POINT_ID	point feature ID
CREATED_DATE	date feature created
MODIFIED_DATE	date feature modified
FEATURE_USER_ID	user_id that created feature
OBSERVATION_USER_ID	user_id that created observation
REGION_ID	USFS Region number that collected the data
LABEL	Quick Key label
HOST_CODE	host species code
HOST	host common name
HOST_GROUP_CODE	host group code
HOST_GROUP	host group name
DCA_CODE	damage causing agent code
DCA	damage causing agent common name
DAMAGE_TYPE_CODE	damage type code
DAMAGE_TYPE	damage type name
PERCENT_AFFECTED_CODE	percent affected code - percent of canopy (live and standing dead trees) within the poylygon or grid cell that are damaged or recently dead.
PERCENT_AFFECTED	percent affected range - percent of canopy (live and standing dead trees) within the poylygon or grid cell that are damaged or recently dead.
PERCENT_MIN	percent affected range minimum
PERCENT_MAX	percent affected range maximum
PERCENT_MID	percent affected range midpoint
NUMBER_OF_TREES_CODE	tree count range code
NUMBER_OF_TREES_COUNT_RANGE	tree count range
TREE_COUNT	tree count
NOTES	notes
OBSERVATION_COUNT	single or multiple observations on feature
COLLECTION_MODE	DMSM collection mode
SNAPGRID_ROW	grid cell row number
SNAPGRID_COLUMN	grid cell column number
AREA_TYPE	polygon area type (polygon or grid_<size>)
ACRES	acres calculated from Albers equal area projection
SURVEY_YEAR	survey year
LEGACY_SEVERITY_CODE	defoliation severity code - legacy data only
LEGACY_PATTERN_CODE	defoliation pattern code - legacy data only
LEGACY_TPA	mortality dead trees per acre - legacy data only
LEGACY_NO_TREES	mortality number of dead trees count - legacy data only
LEGACY_FOREST_TYPE_CODE	forest type group code - legacy data only
LEGACY_FOREST_TYPE	forest type group name - legacy data only
OBSERVATION_ID	unique observation record ID
IDS_DATA_SOURCE	IDS data source code
DATA_SOURCE_NAME	IDS data source name
US_AREA	general US area where data resides

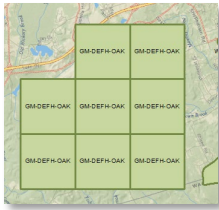
COLOR KEY	Attributes common to AREAS and POINTS
	Attributes unique to the AREAS feature class
	Attributes unique to the POINTS feature class
	Legacy only attribute

Example Data – Polygon Area Feature in DAMAGE_AREA_FLAT feature class



FIELD	VALUE
OBJECTID	3634898
DAMAGE_AREA_ID	{2620c572-a376-4d43-9cbc-c5ad579f5965}
SHAPE	Polygon
CREATED_DATE	8/2/2016 17:26
MODIFIED_DATE	8/2/2016 17:26
FEATURE_USER_ID	<DMSM username>
OBSERVATION_USER_ID	<DMSM username>
REGION_ID	1
LABEL	FEB-GrandFir
HOST_CODE	17
HOST	grand fir
HOST_GROUP_CODE	<null>
HOST_GROUP	<null>
DCA_CODE	11050
DCA_COMMON_NAME	fir engraver
DAMAGE_TYPE_CODE	2
DAMAGE_TYPE	Mortality
PERCENT_AFFECTED_CODE	4
PERCENT_AFFECTED	Severe (30-50%)
PERCENT_MIN	30
PERCENT_MAX	50
PERCENT_MID	40
NOTES	<null>
OBSERVATION_COUNT	SINGLE
COLLECTION_MODE	<null>
SNAPGRID_ROW	<null>
SNAPGRID_COLUMN	<null>
AREA_TYPE	POLYGON
ACRES	210.02
SURVEY_YEAR	2016
LEGACY_SEVERITY_CODE	<null>
LEGACY_PATTERN_CODE	<null>
LEGACY_TPA	<null>
LEGACY_NO_TREES	<null>
LEGACY_FOREST_TYPE_CODE	<null>
LEGACY_FOREST_TYPE	<null>
OBSERVATION_ID	{dee24b43-bade-46c9-8daf-e8b9a7471572}
IDS_DATA_SOURCE	88
DATA_SOURCE_NAME	DMSM_DAMAGE_AREAS
US_AREA	CONUS

Example Data – Grid Area Feature in DAMAGE_AREA_FLAT feature class



FIELD	VALUE
OBJECTID	3726478
DAMAGE_AREA_ID	{0ab29908-b5f5-4fd9-989a-5cb1801fdeb9}
SHAPE	Polygon
CREATED_DATE	6/30/2016 13:41
MODIFIED_DATE	11/7/2016 20:05
FEATURE_USER_ID	<DMSM username>
OBSERVATION_USER_ID	<DMSM username>
REGION_ID	9
LABEL	GM-DEFH-OAK
HOST_CODE	<null>
HOST	<null>
HOST_GROUP_CODE	9702
HOST_GROUP	n. red oak, paper birch
DCA_CODE	12089
DCA_COMMON_NAME	gypsy moth
DAMAGE_TYPE_CODE	14
DAMAGE_TYPE	Defoliation > 75% of leaves defoliated
PERCENT_AFFECTED_CODE	5
PERCENT_AFFECTED	Very Severe (>50%)
PERCENT_MIN	50
PERCENT_MAX	100
PERCENT_MID	75
NOTES	
OBSERVATION_COUNT	SINGLE
COLLECTION_MODE	<null>
SNAPGRID_ROW	4976
SNAPGRID_COLUMN	1078
AREA_TYPE	GRID_1920
ACRES	910.93
SURVEY_YEAR	2016
LEGACY_SEVERITY_CODE	<null>
LEGACY_PATTERN_CODE	<null>
LEGACY_TPA	<null>
LEGACY_NO_TREES	<null>
LEGACY_FOREST_TYPE_CODE	<null>
LEGACY_FOREST_TYPE	<null>
OBSERVATION_ID	{5cbca00a-37cd-4f64-91c5-668a75b00a3a}
IDS_DATA_SOURCE	88
DATA_SOURCE_NAME	DMSM_DAMAGE_AREAS
US_AREA	CONUS

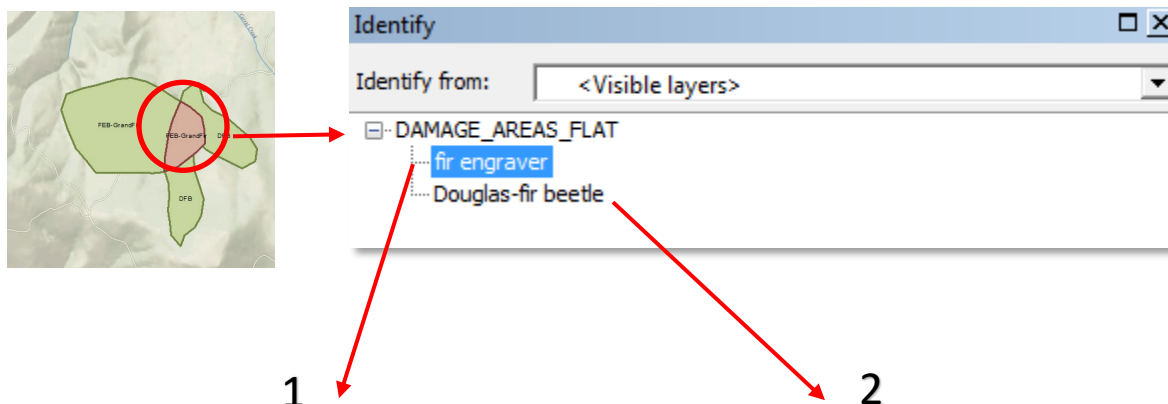
Example Data – Point Feature in DAMAGE_POINT_FLAT feature class



FIELD	VALUE
OBJECTID	4191
DAMAGE_POINT_ID	{d67cedf3-73a1-4a7c-b595-1948afc47cca}
SHAPE	Point
CREATED_DATE	8/2/2016 18:18
MODIFIED_DATE	8/2/2016 18:18
FEATURE_USER_ID	<DMSM username>
OBSERVATION_USER_ID	<DMSM username>
REGION_ID	1
LABEL	DFB
HOST_CODE	202
HOST	Douglas-fir
HOST_GROUP_CODE	<null>
HOST_GROUP	<null>
DCA_CODE	11007
DCA_COMMON_NAME	Douglas-fir beetle
DAMAGE_TYPE_CODE	2
DAMAGE_TYPE	Mortality
NUMBER_OF_TREES_CODE	2
NUMBER_OF_TREES_COUNT_RANGE	2-5
RANGE_MIN	2
RANGE_MAX	5
RANGE_MID	3.5
TREE_COUNT	<null>
NOTES	<null>
OBSERVATION_COUNT	SINGLE
COLLECTION_MODE	Aerial_Survey
ACRES	2
STATUS	1
SURVEY_YEAR	2016
OBSERVATION_ID	{8ef57aa7-1356-414c-b67e-389396b02e85}
IDS_DATA_SOURCE	89
DATA_SOURCE_NAME	DMSM_DAMAGE_POINTS
US_AREA	CONUS

Example Data – Multiple Observations

Overlapping features can result in multiple observations. This flat file stores these as “pancake” features with duplicate geometry, a common IDS feature ID and unique observation IDs. Care must be taken to account for the possibility of multiple counting during any data summarizing.

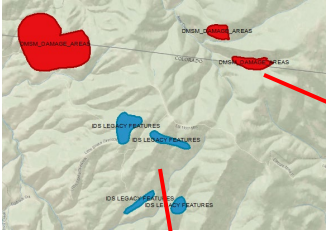


FEATURE 1		FEATURE 2	
OBJECTID	3637283	OBJECTID	3637284
DAMAGE_AREA_ID	{07d06669-6229-4877-9fa1-eeb71f1572b1}	DAMAGE_AREA_ID	{07d06669-6229-4877-9fa1-eeb71f1572b1}
OBSERVATION_ID	{d5484845-061b-4878-9f3f-efa3cb92f767}	OBSERVATION_ID	{a6da9151-f244-4329-889f-36304365b88d}
HOST_CODE	17	HOST_CODE	202
HOST	grand fir	HOST	Douglas-fir
HOST_GROUP_CODE	<null>	HOST_GROUP_CODE	<null>
HOST_GROUP	<null>	HOST_GROUP	<null>
DCA_CODE	11050	DCA_CODE	11007
DCA_COMMON_NAME	fir engraver	DCA_COMMON_NAME	Douglas-fir beetle
DAMAGE_TYPE_CODE	2	DAMAGE_TYPE_CODE	2
DAMAGE_TYPE	Mortality	DAMAGE_TYPE	Mortality
PERCENT_AFFECTED_CODE	4	PERCENT_AFFECTED_CODE	3
PERCENT_AFFECTED	Severe (30-50%)	PERCENT_AFFECTED	Moderate (11-29%)
OBSERVATION_COUNT	MULTIPLE	OBSERVATION_COUNT	MULTIPLE
ACRES	28.39	ACRES	28.39

- Same DAMAGE_AREA_ID (same “footprint” feature ID for each feature)
- Different OBSERVATION_ID (distinct observation records for each feature)
- Different OBJECTID (2 “pancake” features with identical geometry)
- Flagged as having MULTIPLE observations

Example Data – Legacy features vs. DMSM features

The National IDS database includes data from 1997 – present. Data collection platforms have changed over time with some data being collected on paper maps and with various digital systems. Data collection standards remained fairly constant from 1997 – 2015. New ways of measuring damage intensity began in 2012 and became part of the new DMSM system in 2015. Namely, the addition of the PERCENT_AFFECTED standard used to characterize the percent of live and standing dead trees that are damaged regardless of damage type. Previously, surveyors made estimates of dead trees per acre or total dead trees for a mortality polygon.



- Same host, agent and damage type
- Different mortality measure (dead trees per acres or total number of trees vs. percent affected)

IDS_LEGACY_FEATURES		DMSM_DAMAGE_AREAS	
OBJECTID	130731	OBJECTID	139001
DAMAGE_AREA_ID	20122011879	DAMAGE_AREA_ID	{e2fee731-d811-4f7d-a760-08387b2c0c1b}
SHAPE	Polygon	SHAPE	Polygon
CREATED_DATE	<null>	CREATED_DATE	8/18/2015 19:04
MODIFIED_DATE	<null>	MODIFIED_DATE	8/18/2015 19:04
FEATURE_USER_ID	<null>	FEATURE_USER_ID	<null>
OBSERVATION_USER_ID	<null>	OBSERVATION_USER_ID	<null>
REGION_ID	2	REGION_ID	2
LABEL	<null>	LABEL	<null>
HOST_CODE	108	HOST_CODE	108
HOST	lodgepole pine	HOST	lodgepole pine
HOST_GROUP_CODE	<null>	HOST_GROUP_CODE	<null>
HOST_GROUP	<null>	HOST_GROUP	<null>
DCA_CODE	11006	DCA_CODE	11006
DCA_COMMON_NAME	mountain pine beetle	DCA_COMMON_NAME	mountain pine beetle
DAMAGE_TYPE_CODE	2	DAMAGE_TYPE_CODE	2
DAMAGE_TYPE	Mortality	DAMAGE_TYPE	Mortality
PERCENT_AFFECTED_CODE	<null>	PERCENT_AFFECTED_CODE	2
PERCENT_AFFECTED	<null>	PERCENT_AFFECTED	Light (4-10%)
PERCENT_MIN	<null>	PERCENT_MIN	4
PERCENT_MAX	<null>	PERCENT_MAX	10
PERCENT_MID	<null>	PERCENT_MID	7
NOTES		NOTES	<null>
OBSERVATION_COUNT	SINGLE	OBSERVATION_COUNT	SINGLE
COLLECTION_MODE	<null>	COLLECTION_MODE	<null>
SNAPGRID_ROW	<null>	SNAPGRID_ROW	<null>
SNAPGRID_COLUMN	<null>	SNAPGRID_COLUMN	<null>
AREA_TYPE	POLYGON	AREA_TYPE	POLYGON
ACRES	10.92	ACRES	15.31
SURVEY_YEAR	2012	SURVEY_YEAR	2015
LEGACY_SEVERITY_CODE	-1	LEGACY_SEVERITY_CODE	<null>
LEGACY_PATTERN_CODE	-1	LEGACY_PATTERN_CODE	<null>
LEGACY_TPA	2.29	LEGACY_TPA	<null>
LEGACY_NO_TREES	25	LEGACY_NO_TREES	<null>
LEGACY_FOREST_TYPE_CODE	9000	LEGACY_FOREST_TYPE_CODE	<null>
LEGACY_FOREST_TYPE	MIXED CONIFERS	LEGACY_FOREST_TYPE	<null>
OBSERVATION_ID	2699176	OBSERVATION_ID	{565b481f-a456-40dd-9195-8ac2f3141ac7}
IDS_DATA_SOURCE	87	IDS_DATA_SOURCE	88
DATA_SOURCE_NAME	IDS LEGACY FEATURES	DATA_SOURCE_NAME	DMSM_DAMAGE_AREAS

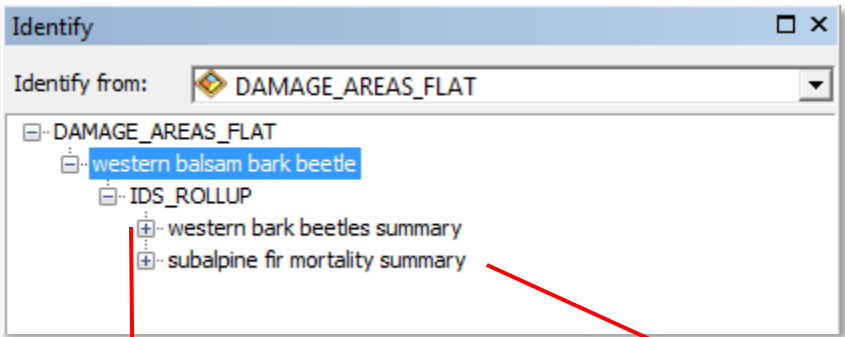
Rollup Summaries (Optional)

The following is a list of summaries that group IDS records together. These groups are used for national reports and for some reports on <https://www.fs.usda.gov/science-technology/forest-health-protection/assessment-applied-sciences> website. The **IDS_Rollup** table contains all records that participate in rollup summaries by listing the OBSERVATION_ID, rollup code, and name of a corresponding summary or summaries. Some records participate in multiple summaries while some do not participate in any. The DAMAGE_AREAS_IN_ROLLUP and DAMAPE_POINTS_IN_ROLLUP relationship classes describe the relationship between the features and the summaries.

- Heterobasidion root disease summary
- Mountain pine beetle summary
- Subalpine fir mortality summary
- Western bark beetles summary
- Western five-needle pine mortality summary



This features belongs to 2 different rollup summaries; western bark beetles and subalpine fir mortality



Record 1		Record 2	
OBJECTID	90651	OBJECTID	215701
OBSERVATION_ID	3842608	OBSERVATION_ID	3842608
rollup_cd	91201	rollup_cd	91304
rollup_name	western bark beetles summary	rollup_name	subalpine fir mortality summary
feature_type	polygon	feature_type	polygon

For More Information

<https://www.fs.usda.gov/science-technology/data-tools-products/fhp-mapping-reporting/detection-surveys>

https://www.fs.usda.gov/foresthealth/technology/docs/DMSM_Tutorial/story_content/external_files/GIS-Handbook-for-Forest-Health-Detection-Survey.pdf